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THE

MINERAL CONCHOLOGY

OF

GREAT BRITAIN;

OR

COLOURED FIGURES AND DESCRIPTIONS

OF THOSE

REMAINS OF TESTACEOUS ANIMALS

OR

Shells,

WHICH HAVE BEEN PRESERVED AT VARIOUS TIMES AND DEPTHS IN THE EARTH.

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DESIGNER OF ENGLISH BOTANY, &c.

Many, O Lord my God, are thy wonderful works which thou hast done; they cannot be reckoned up in order to thee: if I would declare and speak of them, they are more than can be numbered.

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1818

AMMONITES splendens.

TAB. CIII.

Spec. Char. Involute, depressed, front flat with crenulated edges; inner whorls three parts concealed, few; sides flat; radii alternately one long and two short; aperture long.

Corne d' Ammon fort plate, unié ét ornée de fleurs. *Bourguet Traité des Petrifications. pl.* 48. *f.* 312.

The whorls are in number about three, quickly diminishing, the aperture being half the diameter of the shell long at the back, one fourth wide; the front narrower. The long radii are very prominent near the centre of the shell, and obscure towards the middle of the whorls; near the front they are again prominent, and together with the short ones form the crenulated margin; they all curve a little towards the mouth. The middle of the front is nearly plane. The cast is ornamented in the same way as the external surface.

This beautiful species is found in a pyritaceous marle at Folkstone in Kent. I received specimens from Mr. Dillwyn, and also from the indefatigable Mr. Gibbs. I do not yet know of their being found elsewhere, although some other of the Folkstone species are found in Sussex. The shell often remains: it is extremely thin, and of a cream colour, except where it has become partly decomposed, when it often exhibits the most splendent iridescent lustre, equal to those Ammonites, &c. envelloped in the Carinthian

1815. 19.

marble, and I think superior to the Broad Marston Ammonites mentioned by Dr. Maton in his Tour, II. p. 21. (Ammonites planicosta figured in my plate 73.) Fig. 2. shows a good specimen; imagination must supply the figure with lustre, which when the surface is made pellucid with wet is most perfect, yet if gummed is nearly obliterated. Fig. 1 is a small specimen which is less angular but contains the centre (which is commonly lost in larger or older specimens) whole: at the top, near the figure, is a small vestige of the siphuncle, nearly black, which in some specimens is preserved very distinctly, while it appears, from others which are far more perfect, impossible for a siphuncle to exist: it is in the front as is most common. Figure 3 is a pyritaceous cast, and exhibits the foliated sutures which are more or less conspicuous and a little peculiar in the continuous structure below the higher risings of the radii, which are rather blunter than in the upper figure. A species nearly resembling this is, I believe, found at Westbrook in Wilts.

AMMONITES Calloviensis.

TAB. CIV.

Spec. Char. Involute, subumbilicate, rather depressed; volutions about five, three-fourths concealed; front flat; radii small, very numerous, alternately one long and from two to five short, obscure in the latter whorls of old shells; aperture orbicular when young, deltoid with the angles truncated when old.

Age makes a great difference in the form of the whorls of this shell, the young ones being roundish, and having numerous sharp radii in sets, composed of one long one very prominent at the commencement, and from two to five about two-thirds the length, and all passing over the front. The outer whorls of full grown shells are triangular, the two inner angles being truncated, so as to give the shell an umbilicate appearance; the surface is largely undulated, wrinkled near the back, and has many irregular striæ in the place of radii: the inner surface differs from the outer only in the larger whorls being free from striæ and losing the radii sooner.

Found in a more or less mutilated state very abundantly in the shelly Limestone at Calloways or Kellaways Bridge. I have received specimens from many kind friends. Fig. 1 in the plate was sent me by my friend Mr. Salmon of Devizes, and I picked up the specimen from which Fig. 2 is

drawn envelloped in a rough piece of Limestone on the road near Chatley; it is much stained with rust of Iron, but was said to have been brought from Kellaways Bridge. Much of the shell is sometimes preserved of a dirty or ochraceously-stained white; it is rather thick, and does not seem much altered: in the older shells it is generally broken away, especially in the latter whorl, where perhaps the chambers have not been formed, as well as lower down, where the divisions are perhaps not so strong, on account of the breadth of their construction: the cast in this case exhibits something of swollen large undulations, but rarely the costæ, and would not, if detached, be known as part of the same shell. It is composed of sandy Limestone; the chambers contain crystallized Carbonate of Lime: in some cases no vestige of the siphuncle could be perceived, but Fig. 1 shows it near the upper edge.

Fig. 3 exhibits a specimen given me by the Rev. H. Steinhauer: it seems to be a much rarer variety than the other, and is seldom found so perfect; it has similar bivalves, &c. about its matrix as the other has, denoting a similar locality. This was taken out of a piece about two inches in diameter; it distinctly shows the siphuncle which is coloured black, whereas the rest of the shell is nearly white Carbonate of Lime. Possibly good specimens might prove this beautiful little shell to be a distinct species: it differs in having a rather rounded front, the edges of which are defined by sharpish tubercles just on the bend of the radii; the radii also are more prominent near the centre, and the aperture rather lunulate.

AMMONITES excavatus.

TAB. CV.

Spec. Char. Involute, lenticular, subumbilicate; keel sharpish, crenulated; whorls about six, those of the young shell exposed; inner margin nearly right-angled; radii curved, obscure in full grown shells; aperture in adult shells sagittate; inner angles truncated.

A slight concavity separates the keel from the remaining uniformly convex sides; the radii, which in the last-formed whorls of full-grown shells are little more than irregular striæ, are in the first whorls very prominent over the inner angles; these angles in the young shell are rounded, and have not the flat space which in the old shells forms a partial umbilicus. The length of the aperture is about half that of the diameter of the shell, and the width at the back about one-third. The chambers are rather distinct.

I had the pleasure of picking this up a few years ago on the productive hill of Shotover near Oxford, and as I saw no more specimens it may possibly be rare. The shell which is replaced by Carbonate of Lime is moderately thick, and appears very exact in most parts. The chambers are commonly hollow, and crystallized within; the thin septa are also distinctly replaced by Carbonate of Lime. The finishing chamber, which would add a fourth to the size of the whole, and which I have separate, is filled with

a granular Limestone, similar to that in which it was found, and which is quarried there for paving, building, &c. The perpendicular inner margin of the whorls is three-eighths of an inch on the biggest part; thus the umbilicus is deep, although commencing rather suddenly at the fourth whorl, the bottom is consequently nearly flat, composed of four or five whorls, and very perfect, to the minutest. I was glad to discover the proper place for the siphuncle, expressed on the upper edge, by breaking the shell in looking for the contour of the chambers.

This somewhat resembles Amaltheus margaritatus of De Montfort, t. 23, p. 91. The place of the siphuncle is of much consequence in distinguishing them, as his is in the middle of the inner margin.

AMMONITES Walcotii.

TAB. CVI.

Spec. Char. Involute, depressed; volutions four, three-fourths exposed, with a concentrate furrow; lunate undulations over half the sides; front with a carina between two furrows.

Aperture oblong, its length equal to one-third of the diameter of the shell: the sides are flatted; each whorl is divided into two parts by an obtuse furrow; the inner half is nearly smooth, the other marked by semi-lunar depressions.

This species is much spread about; I have it in ferruginous marly Limestone from near Bath—from Llantrissant near Cardiff by favour of Miss Hill—and from White Lackington Park. I have specimens marked Devonshire and River Trent. It is abundant in clayey Ironstone or black marle at Colebrook dale, with blend or black Sulphuret of Zinc, and included in balls in the dark pyritaceous or Alum Clay at Whitby.

The species generally runs from two to four inches in diameter; the shell is laminated and scaly, composed of two, three or more coats, and rather deep, yet the sutures of the septa continue to near the outside, and the form is the same throughout the cast, differing from the outside ornament or pattern only in the greater depth of the furrow. The insides are divided by various crystallizations of Carbonate of Lime or Iron, or more solid or earthy, and more

or less distinct in the divisions or chambers, agreeably to the nature of the stratum in which the specimens are found. The section figured is from a Bath specimen, and shows several varieties of compact earthy marle, dendritical, &c. and the divisions more or less perfect, or obliterated, as it was cut rather irregularly, and the double line of the siphunculus is in some places very unintelligible; it is, however, very conspicuous in many specimens just under the thin shell of the keel, and appears to be nearly continuous. Walcot's figure (Bath Petrifactions, fig. 41, p. 32) appears a worn specimen, the inner whorls being destitute of transverse costæ. Its foliated sutures are sometimes more distinct.

AMMONITES angulatus.

TAB. CVII.—*Fig.* 1.

Spec. Char. Involute; volutions six or more, exposed, angular at the back within; radii prominent, split over the front, commencing in the cast from a narrow concave space.

The aperture is rather longer than wide, its width equals one-fifth the diameter of the shell; around the concentric angle at the inner part of the whorl is a narrow concave space, from the outer part of which commence the radii: this angle and the concave space are indistinct on the outside of the shell.

I received this, I think, rare and curious specimen from the Whitby Alum Clay, by favour of Mr. J. M. Sowerby, among various other specimens. The line at the inner part is apparently only in the cast, the small shelly part remaining on the specimen being destitute of it. The shell appears to be replaced by a mixture of pyrites, Carbonate of Iron, and Limey marle, but more stony within. The sinuated margins of the septa are rather close, but not particular or very distinct; if any thing they are more acute than in the A. communis. I have not seen the siphuncle or plains of the septa, but I presume they bear a close resemblance to the following. Indeed the resemblance between this species and communis is so general, that if the internal angle were not observed, it would, from its external appearance, be considered as the same, yet I expect it is always more ovate in the opening, with an approach to a flattish front. The shell seems somewhat laminated. The forked divisions in the front of the shell turn upwards in both.

AMMONITES communis.

TAB. CVII.—*Figs. 2, and 3.*

Spec. Char. Involute; volutions six or more, exposed; radii annular, prominent, split over the front; aperture circular.

Syn. Corne d' Ammon a raies doublées vers le haut du dos. *Bourguet, &c. pl. 42. f. 276.*

The aperture about one-fifth the diameter of the shell. The radii, which in the cast commence quite at the inside of each whorl, are continued nearly straight to the round front, over which they are sometimes forked and sometimes divided and united again on the opposite side.

This species, varyiug a little, is very common in the Alum Clay at Whitby; it is mostly dark coloured calcareous marle, shining with pyrites. The Ammonites are called in common Snake-stones, and superstition has accounted for their having been found constantly without heads, saying, the curse of St. Cuthbert was the cause of it; but as some of the dealers felt it a possible inconvenience, they were determined to be less barbarous, and compassionately supplied some with heads. I was so curious as to desire to see what sort of heads might be substituted, and Lady Wilson kindly procured me a specimen when at Whitby. I have figured that specimen for the information of others; see fig. 2. The beatiful Keynsham Ammonites are also called Snake-stones, having been changed into stone by some devotee for the benefit of his brethren. Fig. 3 is a small specimen, showing something of the section and septum, which is nearly round, exclusive of the space occupied by the inner whorl.

This species is perhaps among the fossil Ophiopomorphites of Plott.

AMMONITES Nutfieldiensis.

TAB. CVIII.

Spec. Char. Involute, volutions four or more, nearly concealed; radii numerous, prominent, with shorter intermediate ones over the rounding front. Aperture obcordate.

Septa rather numerous, elegantly lobed and sinuated in the usual way; the intermediate shorter *radii*, or rather *undulations*, are often in pairs; they extend nearly half way over the sides: the longer radii are most prominent near the centre. The mouth is two-fifths of the diameter in length, and about the same in width; the front rounded.

Plentiful in the green Sandstone, above the greater beds of Fullers Earth in which the fine-coloured Sulphate of Barytes, Brit. Min. tab. 237, is imbedded. It is found from three inches to a foot in diameter, if I may include some specimens which vary a little in the radii. The present species has two or three short ones in a set, but some appear to have radii regularly the whole length all round. Some also appear to be more compressed, others rounder. The specimens are chiefly casts in dark Irony clay, ochraceous externally, and have sandy Quartz and Chlorite about them.

A specimen which I have lately received from Hythe in green sand is the same species.

MUREX striatus.

TAB. CIX.

VAR. *α. (carinatus)* having three or four of the transverse projections more prominent than the rest, especially the upper ones.

THERE have been found recent shells very similar to this, and bearing the same relation to M. antiquus, *Linn.* (M. despectus, *Penn.*) as this does to my M. striatus, tab. 22, such appears to be the M. carinatus, Penn. I have a recent specimen somewhat carinated, and among a number of Fossil ones a complete series is easily selected. These Fossils have often been taken for the same species as the recent M. carinatus, but an attentive view of the proportions of the spire and the last whorl will readily distinguish all the varieties: the recent one having a longer spire, more like M. contrarius, tab. 23. which also is liable to the same carinated variation of form, but in a less degree and more rarely. I have endeavoured to show some variety with the younger shell, selected by Mrs. Cobbold from the same pit as M. striatus and M. contrarius, formerly figured, and with which the least carinated ones had been arranged in pairs. I have also had great variety from the Rev. G. R. Leathes and other Suffolk friends.

Fig. 1 is a moderate sized specimen; fig. 2 shows almost all the projections rather broad; in fig. 3 they are more regular; and in fig. 4 they are monstrous, and the beak is elongated: fig. 5 is a young shell.

Pl. X. 2. XX.

BUCCINUM, *Linn.* &c.

GEN. CHAR. Univalve; spiral; oval, or elongated; aperture nearly longitudinal, oblong, with a reflected sinus at the base of the columella. Columella plain, tumid.

BUCCINUM elongatum.

TAB. CX.—*Fig.* 1.

SPEC. CHAR. Shell ovate-elongated, transversely striated; whorls seven, rather convex, longitudinally undulated; outer lip obscurely crenulated within; mouth oval with a short recurved sinus.

TWICE as long as wide, the aperture is rather less than half the length; the undulations upon the lesser whorls are tolerably regular and straight; upon the last whorl they are less uniform and more curved; the inner lip is smooth, thicker at the base.

Some doubts may be entertained, of this being a trifling variety of B. undatum of *Linn.* with greater regularity in the undulations, since we know how much the B. undatum varies in that respect: indeed it is with much uncertainty I give it here as another species. The length of the spire may perhaps distinguish it, wherefore I have called it *elongatum*. Mr. Herbert brought this shell from Walton le Soken Crag-pits, Essex, in 1810. I do not at present know of another specimen, but would recommend further search to be made after fossils so nearly related to recent shells. It is

a curious circumstance, that not long since, my kind friend, the Rev. W. Bingley, presented me with a remarkably distorted recent specimen (perhaps I should call it a monstrosity) of Buccinum undatum with a very elongated spire, twice as long as the lower whorl, and with a single spiral rounded ridge embossed on the upper part of it.

BUCCINUM rugosum.

TAB. CX.—*Fig.* 3.

Spec. Char. Shell ovate-elongated, obtuse, transversely striated; spire with twelve or fourteen angles; whorls five, prominent; aperture obovate, latter whorl rugged.

Aperture about one-third the length of the shell, rather broadest at the lower part, the sinus in the beak scarcely recurved; the angles on the spire are large undulations, something like those on B. undatum, but more elevated and regular. The apex of the spire is truncated and thick, showing that the egg must have been rather large.

Received from Holywell, by favour of Mrs. Cobbold: specimens are found of various sizes, sometimes quite white, and often stained with ochre, especially in the hollow parts, prettily relieving the projections. Its general form bears a great resemblance to Murex rugosus, tab. 34, but it wants the canal in the beak.

BUCCINUM reticosum.

TAB. CX.—*Fig.* 2.

Spec. Char. Shell oblong-ovate, acute, reticulated; whorls six, with the upper and lower parts rounded and sides flattish: outer lip toothed within.

The reticulated surface of this shell very much resembles the impression of some coarse cloth; it is prominent, formed by strong transverse striæ, crossing numerous longitudinal, rather acute undulations; the transverse striæ approach in pairs, and are twice as numerous as the undulations: the mouth is an oval, pointed at the upper end, and with a recurved sinus at the lower. The greatest width of the shell is less than half the length, and equal to the length of the aperture: the outer lip is toothed and striated within; inner lip plane, covering the columella.

Mrs. Cobbold favoured me with this well-preserved specimen from Holywell; it is an handsome-formed shell.

BUCCINUM granulatum.

TAB. CX.—*Fig.* 4.

SPEC. CHAR. Shell ovate, pointed, transversely striated, and with twenty longitudinal rows of tubercles; outer lip thickened, many-toothed within.

THIS has about four rather swelling whorls; between the striæ are many little tubercles arranged in longitudinal ridges, sometimes larger on the upper edge of the whorl; at the upper part of the inner lip is a tooth so placed opposite to one in the outer lip, as to form with it an apparent sinus, corresponding, but smaller, with that at the base of the columella. The aperture is obovate; edge of the outer lip rather straightened in the middle; the sinus at the base is a little curved.

A pretty little shell, which varies from less than a quarter to nearly three quarters of an inch in length. I have been favoured with very perfect specimens by my Ipswich friend. It closely resembles B. macula, but may be distinguished, by the longitudinal rows of tubercles or granules.

OSTREA gregarea.

TAB. CXI.—*Figs.* 1 *and* 3.

Spec. Char. Clustered, oblong, curved, plaited; plaits many, rugged, diverging from a longitudinal plait or sulcus; valves unequally convex, beaks produced and curved.

The lower valve is usually more concave than the other, and more or less carinated; the general form of the shell is very variable, nevertheless it constantly curves towards that side in which lies the muscular impression. The plaits are often branched near their commencement; they vary in length, several not reaching the central line; those in the hollow side are smallest. There are no vestiges of ears by the sides of the hinge, the pit of which has a central concavity in the lower valve, and a corresponding convexity in the other, characters which distinguish this from the plaited Oyster found in the green Sand. The shell is rather slender, especially towards the edges.

Immense masses of these shells have been found near Devizes: they are of a greyish colour, and so much attached to each other, that it is difficult to distinguish the valves, and pairs nearly detached are rare. Mr. Sheffield has fine specimens, which he was so good as to lend me; for others I am indebted to Mrs. Gent. A greyish Limestone often fills the insides, and sometimes partially covers the outsides.

The large upper valve, of which two figures are given at fig. 3, is filled with a similar stone superficially stained with Iron: it seems to correspond in some respects with Delamarck's description of O. pectinata: it was sent me by the Rev. Mr. Steinhauer, from the upper Coral rag, at Westbrook, near Melksham, Wilts.

All the species of Oysters are so variable in their contour, that it is difficult from description to determine them.

OSTREA palmetta.

TAB. CXI.—*Fig.* 2.

Spec. Char. Ovate-roundish, obscurely one-eared, depressed, with a plaited margin; plaits diverging from a longitudinal space; beaks straight.

This shell is but slightly curved, it is flatter and the plaits are few and more irregular than in O. gregarea, but it may prove to be a variety in a young state.

Found in Marston field, near Oxford, by Mr. Baker, in a somewhat redder soil than the preceding. The upper valve easily separated, and allowed the inside of the other to be properly seen; there was but a small piece of earth in it.

GRYPHÆA, *Delamarck.*

Gen. Char. A free (except when very young) unequal-valved, inequilateral bivalve; larger valve involutely curved, concave, lesser valve flattish, beakless. Hinge a transversely striated pit, containing an internal ligament, without teeth or crenatures.

The lamellar structure of the Gryphites and their texture is much the same as that of the Ostracites, the hinge is also of the same nature; but the general form has afforded Delamarck a distinguishing character; how far this is sufficient, I leave others to judge. The general perpendicularity of the hinge, the restriction on the right side, and the concavity of the smaller valve may assist.

The length of most of the species is greater than the width; the larger and lower valve is very concave, gradually curved into a large, more or less involute beak, along which runs one side of the pit holding the hinge cartilage: this side is consequently curved. The lesser valve is flat or convex within, and forms a kind of lid; the part to which the hinge cartilage is attached in this valve, is flat and perpendicular. The very young shells are nearly flat and attached to other bodies, of which they take the impression, through both valves; when they are full grown they lose their attachment, and the impression remains upon the beak of one valve and upon that part of

the other valve which met it when it was young, although now far removed. I have a specimen, upon the beak of which is the concave impression of a Cardium, and a convex impression upon the lid;* their correspondence appears at first difficult to understand, but they prove, that Gryphææ are no more free shells than Ostreæ. The otherwise independent appearance of full grown shells, deceived the great and discerning Delamarck. The right side is often distinguished by an obscure lobe or sulcus.

These shells seem generally more changed than most petrified Oysters, and the lamina are less tender and less divided. Fragments, however, are often with difficulty distinguished from those of Oysters. I do not quite know at present that I have received Ostreæ from the same stratum as the Gryphææ, yet the former are abundant in many places. We conceive, that a knowledge of the different species of Gryphæa will be of some importance in identifying formations, as they appear to occur in many places. I have them in the blue and white Lias; in the great Oolite, particularly in the Clay which intersects its beds; in the Clunch Clay, the Kellaway Limestone, &c. and from the following places; Weston, near Bath; Purton Passage-ferry, in the mud; Frethern; Weymouth; Radipole; Kellaway; Elveston, near Bedford; Norton-Disney, in Lincolnshire; Kettering, in Northamptonshire; Birdbrook, in Essex; Strontian, in Argylehire; and Belfast.

* I have a recent Oyster adhering to a Pecten, which has the impression of the ribs of the Pecten through both valves in a similar way, although a quarter of an inch or more in depth: also some specimens of Anomia ephippium of *Linnæus*, which are larger, (being always an adherent shell, and when on the common Oyster not appearing particular) but the ribs or striæ being thus formed, gives them a sort of specific difference. I had this long since, through the generosity of Miss Pocock, gathered near Marazion.

GRYPHÆA incurva.

TAB. CXII.—*Figs.* 1 *and* 2.

SPEC. CHAR. Elongated, very involute, right side an obscure lobe, lesser valve oblong, externally concave.

SYN. *Parkinson, Org. Rem.* vol. III. p. 209, t. XV. f. 3. *Walcot's Bath Fossils,* f. 34, p. 51 N.

So great is the curve of this that the point of the beak is often concealed; when visible it is generally sharp, seldom showing any impression, The curvature is very regular, extending about one turn and an half. The surface is much laminated and rather rugose. The sides are straight, widening gently towards the round front. The lid is oblong, widened towards the front and truncated at the hinge, where it is very thick. The curvature of the beak is sometimes, but rarely, oblique at the apex. The upper specimen, fig. 1, is from the Lias near Frethern, in Gloucestershire, by favour of Thomas Meade, Esq. Its incurvation seems to hide the mark of attachment, which, however, will be found distinct in many of the genus. My kind friend, Thomas Walford, Esq. long since favoured me with the curious gregareous specimen, fig. 2. from Birdbrook, Essex; it resembles some I have from the Cornbrash at Chatley, &c.

GRYPHÆA obliquata.

TAB. CXII.—*Fig. 3.*

Spec. Char. Oblong, slightly involute, oblique; right side an obscure lobe; lesser valve irregularly ovate, externally concave.

The curvature of this shell rarely forms one whole circle, the beak turns to the right side; it is seldom sharp, but often truncated by the surface of adhesion to other bodies when it was young: it is a broader shell than the last, with rounded sides.

This species does not seem to mix with the preceding, and by a little use will always be discriminated; it either belongs to another rock formation or another part of the same stratum; information relative to the places they are found at, and other circumstances, may ripen our knowledge as to these particulars.

Most of my specimens of this species are out of blue Lias; one of them has minute young ones attached to it, these are very flat, nearly circular, a quarter of an inch or less in length, without the least appearance of curvature, although they show more beak than young Oysters in general do. Part of the shell of this is replaced by Silex, with those concentric marks so frequent on the green Sand Fossils; it is in blue Lias, from St. Donat's Castle, Glamorganshire, by the Rev. W. Traherne.

PLAGIOSTOMA punctata.

TAB. CXIII.—*Figs.* 1 *and* 2.

Spec. Char. Depressed, obliquely obovate; with numerous diverging striæ; anterior side long, straight; ears nearly equal; diverging striæ transversely marked with other very fine striæ, or punctums.

When young the margin is rather a greater segment of a circle than half, but older shells approach to an oval, the greatest length of which is placed obliquely parallel to the cavity on the anterior side, in which lies one of the ears; the diverging striæ are fine, becoming obscure in the older shells; the transverse ones are hardly to be seen, except in the hollows of the others, where they appear as minute punctums: in the young shells they undulate, and seem like rows of minute punctums across each of the diverging striæ. The length and breadth, taken at right angles to each other, are nearly equal; the depth of one valve near the beak is about one sixth of the length.

Having given some of the Plagiostomæ in tab. 77 and 78, I now add a few more species of this tribe, which it may be proper to distinguish, and save some inconvenience to the inexperienced: different species having their respective localities, they will be better understood. The present species has a distinct character in the punctums, as pointed out by Miss E. Hill. This is from a quarry, at Pickeridge Hill, of hardish light and dark grey Limestone, called grey and blue Lias, provincially: it is a little fœtid when scraped; has faint impressions of shells much pressed, or flattened volutions of Ammonites, which being rather on the face of the stone, form a natural resemblance which

the men call "Clocks*." I have another specimen from St. Donat's Castle, Glamorganshire, by favour of the Rev. W. Traherne. Fig. 2 is a young specimen from the ruins of the keep of Cardiff Castle, which was built by Robert Fitzhammon. A. D. 1110. Such were found also at Barry Island, in 1792, by Miss Hill. The stone is very like the other.

PLAGIOSTOMA cardiiformis.

TAB. CXIII.—*Fig.* 3.

SPEC. CHAR. Gibbous, nearly circular, longitudinally furrowed, smooth; anterior side short, straight; wings equal.

So fine are the transverse striæ in this shell, that they are nearly lost, except at the bottoms of the furrows, where they look like rows of very minute dots; this is a direct shell, with nearly equal sides, a little longer than wide; the margin is toothed within: it is nearly related to P. spinosa, tab. 78, having in common with that, much of the general form of a Cardium. Depth of a single valve about one-third of the length.

The great Oolite stratum contains also, larger and lighter or darker coloured specimens of this Plagiostoma, than the one I have figured. I am indebted to the Rev. H. Steinhauer for several specimens from Petty France, in Gloucestershire.

* In a quarry near is the cone-coral Limestone mentioned in British Mineralogy, vol. 2, tab. 149, passing into striated Limestone or striated Spar, the local term for which is "Charrow-bed." Pickeridge Hill, mentioned before at pp. 177, 190, and 228, is in the parish of Corffe, four miles S. of Taunton, Somersetshire.

PLAGIOSTOMA rigida.

TAB. CXIV.—*Fig.* 1.

SPEC. CHAR. Gibbous, obliquely obovate, with many diverging sharp thread-like ribs, and very minute intervening transverse striæ; anterior side long, straight, very concave; ears nearly equal.

THE ribs are sharp, irregularly waved, a little zigzag, about three or four times their thickness distant from each other; the beaks are rather prominent, the shell entire at the edge, thin and rigid to the touch, in consequence of the sharpness of the ribs: except the greater depth, its proportions are the same as in P. punctata. The striæ upon the space between the ribs are too fine to be seen without a lense.

I picked this up in one of the quarries at Shotover, otherwise I have only met with it once, when my friend, Mr. Sheffield, lent me a specimen marked Oxford. P. ovalis is like it, except in being a narrower formed shell, and from the striæ of growth the present does not appear to have been narrower when younger.

PLAGIOSTOMA ovalis.

TAB. CXIV.—*Fig.* 3.

SPEC. CHAR. Rather gibbous, oblique, elongated, oval, with many small ribs and minute intervening transverse striæ; anterior side concave, slightly recurved.

VERY nearly resembling P. rigida, so that at first sight it might be taken for the young of it, but it is of a narrower oval shape, the ribs are rounded, and at a distance from each other only equal to once their thickness; the length exceeds the width, taken at right angles to it.

My specimen is a very neat one from the Fuller's-earth Rock at Small-Cossall, near Bath. The Rev. H. Steinhauer sent it to me in 1813.

PLAGIOSTOMA obscura.

TAB. CXIV.—*Fig.* 2.

Spec. Char. Rather gibbous, oblique, ovate, smooth, externally ribbed? with twenty-five internal sulci: anterior side flattish; beaks prominent.

The width of this shell is greater than the length; it is elegant in form, the anterior side not being so straight as in most Plagiostomæ, and the beaks more elevated. I am not certain, but suppose the margin to be toothed. This specimen from Kellaway was obligingly presented to me by Mr. Salmon.

PLAGIOSTOMA pectinoides.

TAB. CXIV.—*Fig.* 4.

Spec. Char. Depressed, a little oblique, obovate, rather angular at the back; beak pointed; surface with twenty or more carinated ribs, transversely striated; internally plane; margin toothed.

Between each of the ribs the space is very narrow, a little elevated and terminated at the margin by a tooth; the transverse striæ are little else than lines of growth, but they are very numerous and sharp. Both sides are straight, the anterior one twice the length of the other; the ears are prominent and the general contour is that of a Pecten.

From a clayey part of the soil at Pickeridge Hill, by favour of Miss Hill.

VOLUTA, *Linn. Delam.*

GEN. CHAR. Univalve, ovate, subventricose; apex papillary; base emarginate; columella plicated, inferior plicæ largest and longest.

VOLUTA luctator.

TAB. CXV.---*Fig.* 1.

SPEC. CHAR. Shell ovate-acute, crowned with tubercular spines, terminating longitudinal ribs, transversely striated or sulcated; whorls concave above, with a rugged edge; outer lip plain within; mouth oblong.

SYN. Strombus luctator. *Brand. Hant.* 64.
Voluta musicalis. *Lamarck. Env. de Paris* 26.

THE spire is a short cone with rather concave sides; one row of short thick spines winds up it, diminishing rapidly towards the apex; from the bases of these spines proceed undulations or ribs which extend to the beak, and are crossed by numerous linear sulci or plaits, deepest about the lower part; the whole surface above and a small space below the spines is free from transverse striæ, but the whole is longitudinally striated. The last whorl is about three times the length of the spire, angular above and but slightly ventricose; its upper edge is rugged with obscure tubercles, and sometimes an angular depression. Aperture oblong, lips nearly parallel and smooth: on the columella are three or four plaits.

The shell here figured agrees with Brander's from Barton above quoted. It has generally a coarser appearance than its congeners and is often larger, sometimes, perhaps, four or more inches long. The spire varies at the apex, being sometimes very blunt. It is very doubtful whether Branders fig. 65, ought to have been retained under the same name by him.

From Barton Cliff, I have also the fragment of a young one in the blue clay, from a well dug in Richmond Park some years ago.

VOLUTA spinosa.

TAB. CXV. *Figs.* 2 *and* 4, *Var.* β *fig.* 3.

Spec. Char. Ovate-acute, ventricose, crowned with large spines extending into the longitudinal ribs, and a row of smaller spines near the upper edge of the whorl; whorls concave above, transversely striated below. Mouth ovate-elongated; outer lip plain within.

Syn. Strombus luctator. *Brand. Hant.* fig. 65.
Voluta spinosa. *Lamarck. Env. de Paris* 26.

Similar to the last in general form, but the last whorl is ventricose; the edge of the whorls above the concave upper part is generally rectangular, with a row of sharp spines upon its angle. The transverse striæ are often obscure over the upper half or more of the whorl. The mouth has a very obtuse angle at the upper part. Var. β has a greater number of ribs and is less ventricose, fig. 3.

This is *fig.* 65 of *Brander*, and resembles, or is perhaps the same as Lamarck's V. spinosa, although in the French specimens I possess, the whorls are blended into each other, and the lesser row of spines is more irregular; it is besides shorter in proportion to the width. The neatest, whitest, and best preserved specimens at Barton Cliff are generally of this species, but the French specimens are frequently more perfect still, having the yellow lines of colour preserved. The variety β is more distant from the French shell; my figure of it shows the plaited columella, characteristic of the Genus, but which is mostly hid by the position of the shells in Brander's beautiful figures. Fig. 4. is intermediate in form between fig. 2 and 3. My specimens of this species, and also of V. luctator, have all the outer lip so broken as not to show whether it be striated within or not, I therefore take that character from Brander's descriptions.

VOLUTA ambigua var. monstrosa.

TAB. CXV.---*Fig.* 5.

Spec. Char. Shell elongated ovate, acute, with longitudinal undulations and sharp transverse striæ; spire crowned with two rows of obsolete spines. Aperture acute at the top, expanded at the base; outer lip dentato-striated within.

Syn. Voluta ambigua. *Brand. Hant.* 69.

A much narrower shell than either of the last; that part of the whorl above the undulations, or ribs, instead of being concave as in them, is rounded, and has a trans-

verse ridge along its middle: the spines are very small, and only worthy the name on the lesser whorls. The variety here figured is curious, on account of a deep groove along the upper part of the whorls around the whole of the spire; the species may, however, be distinguished, by the constantly rounding upper part of the whorls, and the spines being less prominent. I am favoured with this curiosity from Barton Cliff, by the Rev. W. Bingley.

NAUTILUS elegans.

TAB. CXVI.

Spec. Char. Gibbose, umbilicate, with numerous linear, reflexed, radiating sulci.

About two thirds as thick as wide; the septa are rather numerous, gently waved; the aperture is obtusely sagittate, with the posterior angles truncated; umbilicus small, perhaps closed.

This fine specimen was found in the chalk marle, at Ringmer, in Sussex, in 1814, by Mr. Mantell, and from the remains over the umbilicus it must have been as wide again. I have had numerous portions; one of the last chamber, which not having the siphuncle (in general perceptible) is often less intelligible than when broken so as to show its place, as in this specimen. I suspect that this species is not uncommon near Heytesbury and in some other parts of Wiltshire. I remember Mr. Cunnington had a fine specimen, which, I think, was the same species, but as it was purchased among other things by Dr. Parry that Gentleman only can decide it. It is often found very much distorted, in Sussex, and other places, having the curved lines, its particular character, very much worn or lost, as in the greater part of this specimen.

Mr. Cunnington's, if I remember right, was very perfect in this respect.

AMONITES monile.

TAB. CXVII.

Spec. Char. Sub-umbilicate, with tubercular radii; inner whorls exposed; tubercles hollow, in the interior deep, externally obsolete on the margin; external surface divergingly striated; aperture transversely ovate.

In the cast the radii are composed of tubercles gradually rising higher and becoming elongated towards the front, where the last one is bifid; this and several others are not to be seen on the outside, because the shell is so thick between them as to make the surface level. The inner surface is smooth; the front rather concave, finely striated externally. Aperture about one-third the diameter of the shell in length, and nearly twice as wide. Occasionally we see the siphuncle just within the front.

I am favoured with this, and other curious productions of the green sand at Sandgate, near Folkstone, by a discerning friend, whose zeal for scientific research could not resist attention, even to the often refused rejectamenta of former animation, preserved, I am apt to think, as monuments of the most highly instructive nature, regarding the lapse of ages; while they often afford splendid examples of beauty increased by premature decay.

This Ammonite in many ways baffles description, in being so various according to its state of preservation; the shell is thick originally, and rather laminated; its surface decaying may give much variety as to the protuberances, while it occasionally becomes nacreous with an indescribable lustre; and often most so when the last

remains of the inner shelly lamina exposes the cast, and when the moniliform appearance is most prominent, elegantly forming semicircles, like so many necklaces one above another, not unaptly reminding us of those in fashion about a century ago.

TEREBRATULA plicatilis.

TAB. CXVIII.---*Fig.* 1.

SPEC. CHAR. Gibbose, transversely obovate, finely and obtusely plaited; middle elevated by twelve plaits; fifteen or more plaits on each side; beak slightly projecting.

LENGTH rather greater than the depth; width about one third greater than the length. The plaits continue to near the beak. The beaked valve is rather less gibbose than the other.

I have this species most perfect from the upper Chalk at Northfleet near Gravesend, and also filled with flint from Margate: it is sometimes in such a state as to separate from the chalk, and show something of the interior construction, which is very desirable in this division of shells, as it is often very remarkable. The two upper figures are the upper and lower valve separated from the chalk, and showing the construction of the hinge. The next figure shows both valves closed together.

TEREBRATULA octo-plicata.

TAB. CXVIII.---*Fig.* 2.

SPEC. CHAR. Gibbose, transversely obovate, obtusely plaited; middle elevated by eight plaits; twelve or fourteen plaits on each side; beak projecting.

THIS differs from the last in the number of plaits, having at most but 9 at the sinus, it is also a rather longer shell.

From the Chalk at Lewes; the two specimens here figured differ from each other in the number of plaits, and slightly in shape, but we do not know how to consider them as distinct species: this and the last are nearly related to T. concinna t. 83. fig. 6.

TEREBRATULA Wilsoni.

TAB. CXVIII.---*Fig.* 3.

Spec. Char. Circular, plaited; front cylindrical, margin acutely dentated, elevated in the middle with seven plaits; nine or ten plaits on each side; valves compressed towards the beaks.

The front of this shell is placed at a right angle to the beaked valve, and is nearly of the same length: the remaining parts of both valves are slightly convex: the form of the shell is therefore a cylinder cut off obliquely at one end, and rounded: the sinus at the front, although very deep, does not alter the evenness of the surface.

This is from Mordiford, E.S.E. of Hereford, by favour of Lady Wilson: the structure is curiously different from any I have otherwise seen. I have the honour of naming it after her Ladyship, in commemoration of her zeal for research in this science. The specimens have some of the shell remaining; and are filled with a darkish limestone.

MAGAS.

GEN. CHAR. An equilateral unequalvalved bivalve; one valve with an angular sinus along an incurved beak; line of the hinge and back of the other valve straight, with two projections near the middle.

A partial longitudinal septum with appendages attached to the hinge within.

THIS new Genus has the general contour of the plain Terebratulæ figured in tab. 15; but attention to the parts about the hinge soon distinguishes it. The beak has no circular perforation as in them; but there is a large quadrangular foramen, two sides of which are formed by two projections from the straight back of the flatter valve, and the other two run along to the point where they meet; on each side of it is a flat space extending from the line of the hinge, which is much longer than the foramen, to the apex: if the valves be separated the foramen is divided into two angular sinus's, that in the beaked valve being much the largest. In the middle of the shell rises a thin longitudinal septum reaching from one valve to the other; the upper part of it arches over to the hinge, the front of it is perpendicular, on each side are two shelf-like appendages, one over the other, the upper ones united by slender processes to the hinge. I know of but one species, some variation in these particulars may be expected in others, but the general structure is sufficiently remarkable to warrant the establishment of the Genus.* Most

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* It is not unlikely that Martin's Anomites glaber and others resembling it, the internal structure of which I have not been able to examine, may belong to this Genus. It were much to be wished that some person would publish an account of the curious internal appendages of these shells.

of the Terebratula have lines along the beak, in the same direction as the sinus in this, but the back of the flatter valve is arched, never straight; this also wants the perforation in the beak. The resemblance of the arched septum to the bridge of a violin has suggested the generic name: to which valve this septum is attached I have not been able to ascertain, because I could not open the shell without breaking it.

MAGAS pumilus.
TAB. CXIX.

SPEC. CHAR.....

THE beaked valve is hemispherical, smooth, with a circular edge, and small incurved beak; the other valve nearly flat, with a long transverse straight back.

Mr. Richard Taylor, jun. favoured me with specimens of this singular shell, found in the Chalk near Maudesley, Norwich. The construction being new to me I was glad to exhibit it, especially as it appears to be newly discovered in the chalk; the specimens, he observes, are sometimes smaller than No. 1, but seldom larger than No. 2, 3, and 4. The extraordinary interior construction I have only been able to give an imperfect idea of, not having an opportunity to examine sufficient specimens. When magnified the shell is found to be curiously punctured in a minute quincunx order, which appears to depend on the construction of it, as in most of the tribe related to the Terebratula; it is generally most apparent within the substance.

SPIRIFER.

GEN. CHAR. An equilateral unequalvalved bivalve; valves beaked; one valve with a large angular sinus along the inside of the beak; hinge transverse, long and straight. Two spirally coiled linear appendages to the hinge nearly filling the shell.

THE shells of this Genus are in general wider than long, with a large sinus or fold elevating the front; unarmed; many of them longitudinally furrowed. The sinus in the beak being met at its open end by the back of the lesser valve, forms a triangular foramen, with inflected edges.* The surface of the beak on each side of this foramen is flatted and often widely extended, having numerous parallel longitudinal striæ upon it, which gives it much the appearance of the outside of the hinge of Arca. I think this Genus will comprehend nearly all the shells, retained as Terebratula by Lamarck, which have a triangular foramen and not a perforation at the apex of the beak as the character of that Genus requires. The several individuals in which I have discovered the spiral appendages, bear a considerable natural affinity to each other,† from which circumstance we may venture to place many analogous species in the Genus, although their interior has not been ex-

* In some species I have traced these edges quite across the beak, forming septa, somewhat like those in the flatter valve of the Pentamerus, but confined to the beak.

† I gave a paper some time since to the Linnean Society, on the construction of this spiral tubular cartilage, which almost fills the shells, and which I have seen full proof of in Derbyshire and Irish specimens; and Mr. Brown has some curious specimens from Van Diemens land.

posed. I conceive that all those in Martin's division of *Anomitæ d. d.* (Martins's outlines, &c. p. 243.) which he describes as having both valves convex, and a large trigonal foramen belong to this Genus, and also, perhaps, those of his next section with a small foramen, but we are not sufficiently acquainted with their internal structure, to decide whether another Genus may not be necessary to render the divisions of the Linnean Genus Anomia quite natural.

SPIRIFER cuspidatus.

Spec. Char. Inversely pyramidal, longitudinally sulcated; back flat, triangular, equilateral; front elevated by a semicircular sinus, corresponding to a large longitudinal rising in the upper, and depression in the lower valve.

Syn. Anomia cuspidata. *W. Martin in Trans. of Linn. Soc. IV. p.* 45. *t.* 3. *and t.* 4. *fig.* 5. *Petrif. Derb. t.* 46. *& 47. fig.* 3. 4. *and* 5.

Terebratula. *Parkinson Org. Rem. III.* 234. *t.* 16. *fig.* 17.

Deeper valve nearly flat at the back, because its beak is but slightly incurved, or is straight, and sometimes even it is recurved; its depth is equal to its greatest width, which is occupied by the line of the hinge; the other valve is about one third the depth: the length is equal to about one half the width; the edge semicircular; there

are about fifteen sulci on each side of the smooth central wave. A few lines of growth are marked on its surface, continuing over the back, which is finely striated longitudinally. The edges of the foramen are inflected. I have not discovered the spiral appendages to the hinge, but as they may be seen in Anomia trigonalis of Martin, t. 29. f. 36. it is probable they might be found in this, if the specimens were fortunately preserved.

We were obliged to the late Mr. W. Martin for the first account of this species in 1798, and it had not been a second time discovered by him or mentioned by any other author until very lately: he observes it is very rare at Castleton, and that its structure is truly remarkable, &c. As species of shells are said to determine the precise age of the rock they are found in, by degrees we shall gain much useful instruction.

A few years since my good friend, and friend to science, W. Danby, Esq. gave me a specimen, gathered below St. Vincent's rock, near Bristol, and in May, 1815, the Rev. J. M. Trahernes sent it to me as he observes, " from the Mountain Lime with Entrochi, near St. Hilary, Glamorganshire." I have also a specimen from near Cork, by favour of Dr. T. Wood, in 1812. The two first have a few scaly remains of the shell; they are somewhat distorted, with incurved beaks; that from Bristol has some signs of Entrochi, in a dark reddish Limestone; in the other they are very distinct and abundant, the stone is darker with red stains. The specimen from Ireland has less of the shell, and is remarkably distorted, see fig. 5; this distortion appears to imply some difference in the age, as if a further change had taken place, which effected a total reduction or more total loss of the shell, softening the whole mass, the shell previously

interrupting and imposing the distinction and separation of the rocky matter sufficient to keep its form visible.

The other four figures are from the same specimen as Martin figured: I cut a piece from it in search of the spiral cartilage, but it was obliterated: we may still hope to see it in perfection in some other. The Irish and Derbyshire specimens are in a much lighter coloured stone than the others.

NAUTILUS Comptoni.

TAB. CXXI.

SPEC. CHAR. Lenticular, carinated; center covered; surface smooth; keel obtuse; aperture acutely triangular.

THE last whorl covers all the others, and has about ten septa. The centers are covered by a convex crust, more opaque than the rest of the shell. The mouth is formed of two arched lips. Siphuncle probably in the keel. Diameter less than one line.

This is, perhaps, so small a Nautilus, that it is likely to be overlooked in England. I received it from Lord Compton (in the same stone with the Turrilites costata, tab. 36.) who found it at Earl-stoke, seven miles N. E. of Warminster, Wilts. I beg to record his Lordship's penetration, as an honour to himself, and as likely to prove ultimately useful to society; for, as the language of a country (says Lord Moira) may be enriched by a knowledge of other languages, so a knowledge even of the minutiæ of Natural History must facilitate other branches of science in any country, for every atom has its use to infinity. The minuteness and rarity of this specimen made me rather anxious to give it publicity, lest it should be lost.

It agrees in some respects with the genus Patrocles of Montfort, but from the imperfection of some of his figures I do not know how to confide in this, and I think it is a fault to be hasty in making Genera, before we are acquainted with individuals. Now every observer would

 1816. XX2.

consider this as somewhat belonging to the Nautilus, I therefore retain it in that genus at present, rather than go farther, beyond the limits of general knowledge. Nautilus calcar of Fichtel is quoted by Montfort, but it appears certainly to differ from either. I am sorry not to be able to find the siphuncle, but I suspect it is at the outer extremity. In all my specimens, which is seldomer the case in Nautili than in Ammonites, it was obscure: one had a little break where I expected it, but I could not say it was there :---it must therefore be left for further research.

NAUTILUS simplex.

TAB. CXXII.

Spec. Char. Depressed, sphæroidal, umbilicate, plain; mouth lunate, with the angles truncate, embracing the preceding whorl; siphuncle nearest to the inner edge of the septum.

Thickness about four-fifths of the greatest diameter, septa numerous, rather flatter than in Nautilus imperialis, tab. 1. and narrow in the middle.

This is found rather abundantly in the vicinity of Boreham, one mile E. S. E. of Warminster, but often so loosely aggregated in parts as to fall to pieces as a mere marley green sand, as it is commonly called; at the same time some parts are become more or less solid, and compact flinty hornstone, or partially filled with carbonate of lime in crystals. Under these circumstances it is seldom that a good specimen is found, and they vary in shape and size, being compressed or rounded, and from an inch or two to a foot or more in length. The present specimen, from Miss Benett, shewing the place of the siphuncle, helps to distinguish it from species which might otherwise be confounded with it. It bears a great resemblance to Nautilus imperialis, (tab. 1.) but is, however, generally rounder in the curvature, and narrower. In one massy specimen I found what is deemed an Alcyonite imbedded; it is a sort of organic remains, that has repeatedly forked branches, and bearing many clubbed, pearshaped, nearly cuplike or folded, apparent termina-

tions or heads,* some nearly the shape and size of a moderate lemon; the branches about half an inch thick, with five or more calcedonic tubes filled up with flint, &c. the rest being chiefly horny looking flint, which with some difficulty separates from the green sandy and flinty marly mixture. Pectens, &c. are frequently included with them.

The green sand in which this is found owes its name to particles of Chlorite, or earthy Talc, coloured green by Iron mixed with it,† a colour seldom found in Mica, and never imparted by it to the sandstone, of which it may form a part.

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* Since my paper on this was read to the Linnean Society, more specimens have been found in the Warminster green sand, by Miss Benett, indicating many swelling terminations or heads, hydra-like.

† The Fullers' Earth, near Woburn, is often accompanied by a bright green sand, whose colour is occasioned by Iron, it is said.

NAUTILUS truncatus.

TAB. CXXIII.

Spec. Char. Thick, flatted, plain, umbilicate; back flat, mouth elongated, four-angled: siphuncle nearest to the inner margin of the septum.

Syn. *Lister*, 1048.

Thickness rather less than half the diameter; the sides are rather conical and even. Mouth above half the diameter of the shell, long, narrowest towards the back, siphuncle oval. Septa very numerous, not recurved towards the umbilicus.

A fine specimen of this species is figured by Lister, measuring ten inches in the longest diameter; no doubt, when perfect it is sometimes much larger: mine is eight inches, I figure a part of it, as sufficient; the remainder is a broken continuation of it. I have never seen the last chamber. This is composed of a mixture of dark lias limestone and pyrites, found at Keynsham, S. E. of Bristol. It is also said to be found in the blue lias of Bath, &c. Lister does not say where his specimen was found; his figure shows about three whorls, mine did not expose them; possibly when the shell is removed the whorls may be uncovered. Mine has fragments of the shell of considerable thickness about it, indicating that it was smooth when perfect.

NAUTILUS obesus.

TAB. CXXIV.

SPEC. CHAR. Gibbose, umbilicate, plain; back broad, flat; mouth large, squarish; septa very numerous, not recurved; siphuncle nearly central.

THICKNESS about three-fourths the diameter. The mouth is large, being two-thirds the diameter long. The septa are very numerous; their angles not being recurved gives a very open form to the umbilicus. The siphuncle is transversely oval.

My kind and discerning friend Mr. Strangewayes sent me this from the coarse or rather ferruginous limestone, at Norton-under-ham; it is often of a large size (a foot or more long) and clumsy make, but seldom perfect. It is readily distinguished at first sight by the flat broad back, and afterwards by the siphuncle being nearly in the middle of the septa, inclining inwards: both these characters being taken together will distinguish many species, yet I expect more may be occasionally necessary. The shell must have been very thin and without peculiar markings, as there is no sign betwixt the curve and the mouth that betrays any. The divisions are sometimes irregular, but that happens in the most perfect in many other species.

NAUTILUS intermedius.

TAB. CXXV.

Spec. Char. Gibbose, umbilicate, concentrically striated; back broad, flattened; mouth squarish; siphuncle nearest the external edge.

Not so thick as N. obesus, with flatter sides and a narrower back; the septa are also less numerous; it approaches N. truncatus, (tab. 123.) but is thicker, with a broader back; its surface being finely striated, distinguishes it from both.

From Keynsham.—This and the last might easily be confounded with each other; the siphuncle, however, in this, is nearest to the outer part of the shell. From the inner part of the front of a whorl that became exposed in separating, we find it was longitudinally and finely striated. Had not this been discovered, we must have depended more upon the siphuncle, which is round and not transversely oval. The stone in which this and the last figured specimen were imbedded, does not seem to differ much. The shells of either appear to have been very thin, and are so worn that the numerous and thin septa are seen conspicuously exposed.

How admirable is it that Nature allows us so much distinction in specimens that have undergone such vicissitudes, while we are often puzzled with very perfect recent ones! It is truly useful, as we the better discriminate their places in the rock and system; and thus will the recent species become more easy to our exercised faculties.

Thomas Walford, Esq. has nearly similar remains of shells on his estate at Birdbrook, N. W. of Castle Hedingham, Essex, of which he kindly sent me a specimen, in the light chalky marl, perhaps alluvial on the London clay; but I expect, from what I have, that the siphuncle is placed about one-third of the length of the mouth from the last whorl; and although the flatness and width of the shell nearly corresponds, it is not so angular as in the Keynsham specimen. It was part of a septarium, which included the shell, indiscriminately, as a mass of earth. Such light earthy septaria are found under gravel, near the Marquis of Cornwallis's, Culford Hall, near Bury St. Edmund's, Suffolk.

AMONITES giganteus.

TAB. CXXVI.

Simplegades. Montfort, p. 92.

Spec. Char. Depressed, with many radiating, sometimes furcate undulations; inner whorls exposed; sides straitish; mouth obovate.

Var. β. Mouth nearly circular, sides rounded.

Syn. ——— *Lister, pl.* 1046.

There are about 5 distinct whorls in most specimens, the interior ones being almost wholly exposed; the septa are rather numerous with their margins much sinuated. Thickness of var. α equal to about one fourth of the diameter, and rather more in var. β.

I was at a loss how to represent this, which in magnitude and beauty is preserved so many ways for our wonder, instruction, and gratification. It is sometimes filled with small grained Limestone: sometimes the chambers are lined or filled with crystallized Carbonate of Lime; the crystals being commonly equiaxed or inverse rhombs (see British Mineralogy tab. 12.) Such are found, I believe, near Keynsham, and cut and polished, thus shewing the chambers within, and the sinuated margins of the septa, at various depths externally; they are often cut so thin as to be transparent in parts; my late esteemed friend, Dr. Lettsom, presented me with some specimens of this kind, which surpass description. The flint that occurs in the Limestone where these shells abound, occasionally envelopes some of them, the cham-

bers are then generally filled or lined with quartz crystals. I have several large fragments of nearly such from the neighbourhood of Fonthill, Wilts. A specimen from the last place in flint I have figured in British Mineralogy, tab. 310.; it is composed of calcedony, which has formed a thin coat over the shell, septa and all, when the shell decaying has left the calcedony with its exact form. It has been said, somewhere, that Mr. Beckford, of Fonthill, was in possession of one, holding Feldspar; upon enquiry I have every reason to think this to have been a mistake; if such a one was at Fonthill, Mr. Beckford was so kind as to order it to be sent to me, but no such thing existed. The half of one, however, the smaller chambers of which are lined with inverse rhombs of Carbonate of Lime supporting short prismatic crystals of the same substance, was added to my collection; it is from Chicksgrove quarry, one mile and a quarter E. N. E. of Tisbury, near Hindon, Wilts, and measures two feet three inches in diameter. When I was at that place some years ago, the quarry men told me, that they had broken within that week, one as large as the hinder wheel of a coach! Lister says his was two feet, and there is in the museum at Paris, a shell of the same genus four feet in diameter; knowing this, Montfort seems ready to give credit to the assertion, that they are sometimes eight feet. The Chicksgrove one just mentioned is the largest I have met with; it is the var. α and in a compact sandy Limestone; there is part of a curiously formed crab's claw in the stone, and a number of plain serpulæ about the mouth of the shell; there is a specimen of this variety α, brought from Purbeck Isle, as it is called, in Dorsetshire, measuring 21 inches in diameter, to be seen in the basement, in front of one of the warehouses in the London Docks.'

Of the variety β I have several calcareous specimens from the Chicksgrove quarry, one of them lined with equiaxed rhombs of calcareous spar, for which I am indebted to A. B. Lambert, Esq. of botanical celebrity; in the stone imbedding this shell there was a large congeries of Serpulæ, of a different species from those in the other specimen var. α, an Oyster shell, impregnated with Silex, Trigoniæ, various small Shells, small Vertebra, and imperfect Crab's claws. Most of the siliceous specimens are also of the variety β. I am indebted to Mr. Salmon for some masses of Flint, having hollows almost filled with calcedony, which appear to be nearly obliterated chambers of such a shell, of a very large size: they were found in Marlborough Downs.

Some years ago I saw on the shore at the foot of the Cliffs, between Dover and Walmer castle, an impression in Chalk, of an Ammonite, which measured about three feet in diameter.

Chicksgrove quarry produces many Ammonites, they occur in a Limestone, into the composition of which a small quantity of fine sand enters, and as there are dispersed through it many portions of crystallized Carbonate of Lime, that break into laminæ, it has, I am told, been erroneously called sandstone with mica: the quarry men term the particular bed which produced my largest specimen var. α, the spangle bed, (the specimen var. β appears to be from the same bed) from the appearance of these crystals. Miss Benett who has paid indefatigable attention to Chicksgrove quarry, and indeed to Geology in general, has kindly remitted to me the following account of the section, with the nomenclature of the people who work the stone, and a series of specimens which enable me to mark the mineralogical differences of the stones.

A corrected Section of Chicksgrove Quarry, S. of the Village and of the River, in the Parish of Tisbury, in Wiltshire.

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1. Top of the Quarry.—Rubble, fourteen feet.—No shells in this bed. (Impure chalk.)

2. Stone not good, two feet.—The lower part of this bed contains the same shells as the chalk below it.

3. Chalk, two feet.—Trigonias three species, Pectens like those of Thame, Oxfordshire, Ostrea several species, a thick equivalve, bivalve which is common in the rubble beds of freestone, a small bivalve, perhaps Unio, two other small bivalves and a Trochus like those of the flinty chalk. (Hard chalk.)

4. Flint, four inches, (approaching chert.)

5. Chalk, eleven feet.—A rubbly Chalk without shells. (Hard chalk.)

6. Spangle bed, five feet six inches.—Contains Ammonites, Oysters, and various other shells changed into spar. (Limestone, containing some white, but no green sand.)

7. Walling Rag, two feet six inches.—Fragments of shells changed into spar. (Like No. 6, only coarser and harder.)

8. Devil's bed, two feet.—Fragments of shell changed into spar, smaller shells than the Walling Rag. (Like No. 6.)

9. Great Rag, three feet.—No shells, or only small fragments. (A compact sandy Limestone, with minute grains of green sand.)

10. Brown bed, three feet.—Contains Ammonites. (Less compact than the last, with more green sand, some parts of a loose texture.)

11. Trough stone, three feet four inches.—Trigonias, the shell changed into spar, and Ammonites. (Similar to some parts of the last.)

12. White bed, two feet eight inches.—Contains Ammonites. (Between 10 and 13.)

13. Hard bed, three feet six inches.—Trigonias, the shell changed into spar and Ammonites. This bed is very like No. 11. (Rather less green sand than No. 10.)

14. Fretting stone, two feet.—A soft stone and no shells. (A loose sandy Limestone with green sand.)

15. Under bed, two feet.—Fragments of shells changed into spar. (More compact and finer grained than the last, and holding less green sand.)

16. Under bed, two feet six inches.—Contains Trigonias, the cast of the outside of the shell a soft stone. (Like the last, except that it contains no spar.)

The whole depth of Chicksgrove Quarry to the bottom of the stone is 61 feet 4 inches, measured by John Mountague, foreman of the quarry.

The scales of fish, erroneously supposed to have been found in this quarry, were from a tile-stone quarry on Lady-Down, in the parish of Tisbury, and about one mile N. W. from Chicksgrove Quarry.

The above are the names by which the different beds are known by the people who work the quarry.

Most of the stone contains calcareous spar, in the place of the fragments of shells dispersed through it, but No. 14 and 16 are without it; the Spangle bed contains most.

The rare stratum called by Geologists "White Freestone" and here called chalk, but from which it differs in its situation, occurs also at Brill, in Buckinghamshire, and at Upway, in Dorsetshire.

CERITHIUM, *Bruguiere.*

GEN. CHAR. Shell univalve, spiral, terminated at the base by a short truncated or recurved canal; aperture oblique, with an obscure canal at the upper part.

THE shells of this Genus are generally seven times the width of the aperture long, and beautifully ornamented by tubercles, transverse striæ or carinæ and longitudinal costæ, variously combined and proportioned. It seems to be a very natural Genus, containing many species; but the canal at the upper part of the mouth is often very obscure, and sometimes, even entirely wanting. The size of individuals varies from a quarter of an inch to two feet in length, limits which are exceeded by very few Genera of spiral shells. This Genus has been divided into three by Montfort; how far this division may be found necessary by those who are conversant with foreign shells, I will not pretend to say, but at present I feel satisfied with Lamarck's distinctions and would wish to go no further.

CERITHIUM pyramidalis.

TAB. CXXVII.—*Fig.* 1.

SPEC. CHAR. Pyramidal, with six projecting tuberculated angles; whorls 10 or 11, transversely tri-carinated, carinæ tuberculated; six compressed tubercles on the upper part of the last whorl; outer lip expanded.

Syn. Cerithium hexagonum. *Lamarck Env. de Paris, p.* 79.
Murex hexagonus. *Chemnitz Conch. X. p.* 261. *t.* 162. *f.* 1554. 1555.
Murex angulatus. *Brander, p.* 24. *f.* 46.

Although the general form of this is pyramidal with six sides the spaces between the angles or rather costæ are not flat; the costæ are slightly arched, obtuse, with about three tubercles on each, corresponding to the number of obtuse carinæ that cross them, and which have three or four tubercles between each costa: the last whorl shows seven or eight carinæ, and wants the costæ on its lower part, while they are enlarged on the upper part by an equal number of prominent transversely flattened tubercles: the whole surface is minutely and transversely striated. Brander describes seven angles to his Murex angulatus, but I conceive there is no doubt of this being the same species, the number of angles constituting it only a variety. I have two specimens, both with six angles.

From Hordle or Barton Cliffs, by favour of my kind friend, the Rev. Mr. Iremonger; not having the mouth quite perfect in the authentic specimen, a dotted line is added from a specimen the same in every respect, except that its ornaments are sharper, and that it has so recent an appearance, that I cannot answer for its being a fossilized remains, nor do I know where it was found, although shells, almost as recent in appearance, are found at Hordle Cliff.

Lamarck's Cerithium hexagonum comes the nearest in description to this shell, but is distinguished by the flatness of its sides and spinose tubercles. See *Env. de Paris*, p. 79.

CERITHIUM geminatum.

TAB. CXXVII.—*Fig.* 2.

SPEC. CHAR. Conical, elongated, smooth, with seven or eight longitudinally disposed pairs of acute tubercles on each whorl; whorls about twelve; lip even.

THERE are two obsolete transverse carinæ, extending from one pair of tubercles to the next; the upper tubercle of each pair is the largest, particularly upon the last whorl, where it is often bifid; on this whorl are also two other rows of small tubercles, visible; the aperture is nearly round, with a very slightly recurved beak.

I believe this is a rare shell, even at Barton Cliff, from whence I am favoured with it by the Rev. Mr. Iremonger, who has generously allowed me to take many of the most rare and perfect of his specimens, for public information —this is the best specimen I have seen; but I possess a smaller one from the same place, by favour of the Rev. W. Bingley.

CERITHIUM funatum.

TAB. CXXVIII.

Spec Char. Conical, elongated, with two obtuse crenulated transverse ridges upon each whorl; upper part of each whorl thickened and tuberculated; mouth squarish; base smooth.

The tubercles upon the upper part of the whorl form, in some specimens, a kind of corona: the last whorl only differs from the others, in exposing two more transverse ridges; the mouth has a small canal at the upper edge; the beak is rather short. Whorls ten or eleven.

This elegant species seems to have been common at Hordle Cliff, when Mr. Iremonger procured it; the individuals are sometimes neat and white, with a mixture of sand and marle, or stained with ochre; sometimes they are less sharply preserved with a grey or greenish sandy mixture about them, and occasionally the ornament and striæ are obliterated to so plain an appearance, that the species can scarcely be recognized without very careful comparison, the ridges, &c. varying more or less according as they are worn, but commonly having the most distinct appearance about half way from the apex I have named it from the resemblance of the costa to small cords.

Fig. 1 from a bed of blue clay on the indurated marle, Castle-hill, near Newhaven, Sussex, by favour of G. A. Mantell, Esq. collected in 1802 or 1803. Fig. 2 found at Hordle Cliff some years since, and presented to me by the Rev. Mr. Iremonger.

VOLUTA Lamberti.

TAB. CXXIX.

SPEC. CHAR. Fuciform, short, smooth; base elongated, obscurely truncated; columella with 3 or 4 plaits; aperture acute above; outer lip sharp, not expanded towards the base.

SYN. Voluta of Harwich. *Park. Org. Rem. V. III. p. 26. t. 5. f. 13.*

A Cast. *Hist. Lap. Fig. p. 112. t. 33. f. 3. App. to Dale's Hist. of Harwich, pl. 10. f. 14. p. 289. (See Parkinson).*

THE whole surface is smooth; the aperture occupies about two-thirds of the length of the shell, it is nearly of the same form with it, but is acute at the upper part, whereas the apex of the shell is subglobose; the width is considerably less than one-third of the length; the outer lip has a slight sinus where it approaches the spire and is rather expanded in the middle: the base is equally elongated with the spire, and so slightly and obliquely truncated, as to render the beak but obscurely emarginate. The lowest plait of the columella is sometimes confounded with the base of it, when there remain only three plaits.

I retain this as a Voluta,* although the base is, perhaps, scarcely emarginate, and is more taper than usual. It is rather curious that about five specimens have been found in a recent state, much resembling this, which are in the hands of different cognoscenti; Mr.

* It has some affinity to Murex tulipa, *Linn.* or Fasciolaria, *Lam.*

Hall is said to have two, Mr. Jennings one, of which I have seen drawings, some of which indicate an emarginate base : the shape in other respects is so near that it might be considered the same : the colour also corresponds ; the recent one, is, however, finely marked with zigzag or lightening-like stripes, of the colour of the warmest or darkest line of our figure, and is altogether to be admired, so that it has got the appellation *elegans*. It is said to be a native of the Fejee islands in the south seas. I have seen a recent specimen approaching it, with a broad expansion of the outer lip, and emarginate base, without coloured markings.

Fig. 1 is from a young shell by favour of Mrs. Cobbold, from Crag-marle at Holywell ; fig. 2 from the Rev. Mr. Lambert's specimen; it is, perhaps, the most perfect known, and was found in the Cliff at Bawdsey, Suffolk, where the Crag lies upon blue Clay. Fig. 3 is the outline of a cast, by favour of that gentleman, from Aldborough, Suffolk, full twenty miles distant from Bawdsey where the other specimen came from.

I have the pleasure of naming it after the Rev. Mr. Lambert, that his ardour and zeal may be remembered with gratitude.

Mr. Parkinson's figure seems to have been taken from a good specimen, but differs from ours in the contour of the adherent upper part of the lip.

Having been favoured with a sketch of the general nature of that part of Suffolk where the Crag-marle, more or less supplies these, and numerous other vestiges of beings, formerly organized ; I am glad to lay the instructive detail before the public :—" It is that part of the county of Suffolk which, from the comparative lightness of the soil, is expressly called the Sands—it abounds so much in that species of fossil shell, called Crag shells,

that it is much more difficult to say where they are not, than where they are to be found. The Crag at Bawdsey Cliff, near the mouth of the Deben or Delen River, is particularly deserving attention, not only for the variety of shells which it produces, but because you may discover in various parts of it, particularly the southern extremity, the base on which it rests, and which appears to be blue Clay, and such is the Anchorage ground in Hollesley Bay, N. E. of it, visible at ebb tide. On elevated ground, to the west of Melton, N. N. E. of Woodbridge, is a Crag pit, just on the confines of the deep soil of High Suffolk, its produce mixes with the fossils of the blue Clay. At Shottisham, S. E. of Woodbridge, I found the Murex despectus; near Brightwell and Foxall, S. W. of Woodbridge, the reverse Murices and Chamæ abound; near Woodbridge is a vein of imperfect specimens of Venus Islandica, but I never could extract an entire specimen. At Sudbourn, N. of Orford, the Crag is of a much paler colour, and of so concrete a texture, that some walls at Orford are built with it; and in sinking wells through it at Sudbourn no other support is wanted for the sides. The Crag near Aldborough is very loose.* I believe that the soil of the country between the rivers Orwell and Stour, S. and S. W. of Ipswich, is similar to that of the Sands, and equally abundant in Crag; but I have never examined any part of it except the neighbourhood of Wherstead and Belstead. To the westward of Ipswich, Crag was formerly seen on high ground, which is now concealed by plantations; and about half way down, be-

* It consists of fragments mixed with entire shells of Pectens and some others, corals, &c. adhering together around the spaces formerly occupied by other shells, such as Voluta Lamberti, Venus, Islandica, &c. that have left behind them here nothing but their impressions, while in other places they are found entire.

tween this and the river, a tooth and several bones of an elephant were found in sinking a well, ten or twelve years ago. Near Harwich, S. S. E. is the Cliff originally quoted by Lister as the habitat of the inverted Murex, and copied from him by succeeding Conchologists, "Prope Harwich."

AMMONITES Bucklandi.

TAB. CXXX.

Spec. Char. Depressed, inner volutions exposed, with large obtuse radii; back carinated, and a furrow on each side of the keel; aperture quadrate.

Volutions about five, their sides wholly exposed, the back flattish, with two concentric grooves, and an intermediate keel; the radii are swelled towards the back, over which they are suddenly reflected, and gradually lost, as in several other carinated Ammonites; the keel is obtuse and entire.

Found in the Blue Lias of Bath and the neighbourhood, measuring from a foot to 21 inches or more in diameter, and rather remarkable for having frequently lost the inner whorls; which circumstance, by a sort of friendly pun, has given rise to the name given it, in honour of a meritorious and enlightened Geologist, the Rev. W. Buckland, who having found a large specimen, was induced by his ardour to carry it himself, although of considerable weight, and being on horseback it was not the less inconvenient; but the inner whorls being gone so as to allow his head and shoulder to pass through, he placed it as a French horn is sometimes carried, above one shoulder and under the other, and thus rode with his friendly companions, who amused him by dubbing him an *Ammon Knight;* and thus the specimen was secured, by diverting the tedious toil otherwise hardly to be borne. May his zeal for information always be rewarded: may his abilities continue to meet that attention they have hitherto so deservedly gained: may his horn be exalted with honour.

Mr. B. lately found Ammonites striatus, tab. 53. f. 1. in the transition slate of Filliagh, near South-molton, Devonshire.

1816. 7. 2. XXIII.

AMMONITES Conybeari.

TAB. CXXXI.

Spec. Char. Depressed, carinated, volutions many, exposed, with obtuse radii; keel prominent, entire; back flattish, angular; aperture oblong.

Volutions 8 or 9; the radii even, or rather most elevated in the middle of each volution, and lost before they quite reach the angles of the back: keel large and prominent, with a slightly concave space on each side of it.

This species is rather remarkably variable in size, from 2 to 18 inches and more in width, and always having about 8 whorls, generally continuing very perfect to a small center. It is from near Bath. The composition it is preserved in varies much, like that of most of the shells of the Lias strata in general, being Carbonate of Lime more or less crystallized, Iron Pyrites, or mere casts of earthy Limestone, or a mixture of the whole, and shewing the foliated divisions, or nearly plain.

I feel a pleasure in distinguishing this by the name it bears, after two able Geologists, the learned friends and companions of the Rev. Mr. Buckland, whose zeal deserves to be remembered by posterity. This and the following species are generally companions in the same stratum, and are occasionally impressed with each others type.

AMMONITES Greenoughi.

TAB. CXXXII.

SPEC. CHAR. Depressed, volutions two-thirds concealed, obscurely undulated; aperture elliptical, deeply indented by the preceding whorl.

WHORLS four or five, the last nearly half the diameter of the shell, the undulations are continued and rather strongest over the rounding back, they are obscure in all but the central whorls, and the latter whorls of old shells are destitute of them. The outline of the aperture is a very regular ellipsis. The septa are near, very much and beautifully sinuated at their margins, and locked into each other.

This rather singular Ammonite is often formed of pyrites, of rich golden and iridescent tints, and crystallized in the greatest variety of forms, from the octaëdron to the icosaëdron, following the undulations of the chambers and the most attenuated ramifications of the spreading folliculæ, sometimes forming in the place of the shells, &c. &c. occasionally filled with a great variety of crystals of Carbonate of Lime an inch or more in length. Specimens vary in size from 12 to 18 inches or even more. The outer whorl has generally few or no undulations, while they are more distinct in the center, which, if seen separated, might be mistaken for another species. The attenuated and ramifying sutures of the septa are remarkably striking in the present specimen, and put me in mind of the friendly and attentive

Geologist, Greenough, whose genius spreads and ramifies so abundantly, that I could not resist commemorating it with sentiments of friendship, that the suavity of his manners has stamped on my mind. May he continue long to enjoy that ardour, which contributes so much to his happiness, and is so instructive to all around him.

ORTHOCERA annulata.

TAB. CXXXIII.

SPEC. CHAR. Slightly tapering, gently compressed, with strong annular undulations, and minute transverse undulating striæ.

THE undulations are slightly oblique, at a distance equal to about one-fourth the diameter from each other; about the aperture which is oval, there is a considerable space without a ring: the siphuncle is placed a little way within the broader side of the shell.

From a Limestone quarry at Colebrook Dale, Shropshire, it was presented to me by the friendly J. Cotton, esq. Lady Aylesford shewed me, some time since, a similar, but rather shorter specimen. It appears to taper so gradually, that we may suppose it 18 inches or more long when perfect. The upper part of the figure expresses the last chamber, which appears to extend three-fourths of an inch beyond the preceding septum. The form of the shell remains, it being replaced by Carbonate of Iron, thin, but distinct, thickest at the annulations, which are occasionally dark brown from having been worn when uncovered, or destitute of the buff Limestone. The specimen is rather weighty, as if much impregnated with Iron.

AMMONITES auritus.

TAB. CXXXIV.

SPEC. CHAR. Compressed, with obscure radiating undulations tuberculated at their origin; inner whorls exposed; back deeply channelled, bordered by large alternating compressed tubercles.

WHORLS four or five, the last nearly half the diameter, or twice the thickness of the shell long.

Discovered in the micaceous sand when the Devizes Canal was digging, by Mrs. Gent, who favoured me with some other productions from thence some time since: the stratum to which they belong appears to require their aid to distinguish it. It is more or less micaceous, and in most instances there are only casts remaining of the forms that existed or were enveloped in it, and which have not yet been recognised in any other formation that I know of:* they are preserved in a peculiar way, being of so loose and crumbly a texture as scarcely to hold together, and a little change of wet and dry would soon fit them to be dispersed by the slightest wind; but a certain depth has protected them in a place where they might have been preserved for ages more securely than in the most careful hands.

* I have two or three species from Folkstone belonging to the same section as this, one of which I think is figured by Parkinson, Org. Rem. tab. 9. f. 8.

OSTREA canaliculata.

TAB. CXXXV.---*Fig.* 1.

SPEC. CHAR. Depressed, very long, curved, two eared; a descending sinus or two in the anterior margin near the front; sides nearly parallel.

GENERALLY three times as long as wide; the ears are rather large, nearly equal, and distinguishable in both valves: the posterior or concave side is often open: a few concentric undulations are observable near the beak of the lower concave valve: the upper valve is very flat, without a prominent beak.

This species of oyster was sent me by Mr. Richard Taylor, from the Chalk Cliff at Mundsley near Cromer, with Magas pumilus, tab. 119, (where the locality should have been given as here specified,) and Terebratula carnea, tab. 15. fig. 5 and 6. It seems pretty well identified by the ears both in the upper and lower valves, but most conspicuous on the incurved side: the convex side is also mostly plaited with two or more canaliculated projections. I could discover no marks of attachment at the beak, which is acuminated and apparently independant.

The Ostreæ, so universally distributed, are very puzzling in their varieties. I have therefore endeavoured to distinguish two or three here, that some reference may be had occasionally, if the characters I have used will answer the purpose of distinguishing them in the numerous places where they are found.

OSTREA acuminata.

TAB. CXXXV.---*Fig. 2 and 3.*

SPEC. CHAR. Depressed, very long, curved, with large subimbricated transverse waves beneath: beaks and front acuminated.

Two or three times as long as wide, the upper valve rather concave, smooth and nearly even, with a beak almost equal to that of the other valve.

Fig. 2. represents specimens sent me from the clay under the great Oolite of Bath, by favour of the Rev. H. Steinhauer in 1813: they have been parasitical on various formed things: have little or no auricles; they have large undulations, and vary much as to curvature. Fig. 3. are taken from shells found at Aynho, Northamptonshire, by Miss Wilson. They appear to be the same species as the last mentioned, and they vary very much as to their length, curvature, &c.: yet the undulations may help to distinguish them. I have similar shells from near Withyam, Sussex.

PECTEN equivalvis.

TAB. CXXXVI.—*Fig.* 1.

Spec. Char. Lenticular, with rounded diverging ribs and many acute concentric striæ; valves equally convex, the lower one smoothest; ears equal.

The ribs vary in proportion; they sometimes equal the space between them, but are generally less; they are rounded and the striæ are more or less obliterated over them: the spaces between them are slightly concave.

Pectens are generically described by Lamarck as inequivalve, wherefore, I suppose, he had not seen any otherwise; but the present species has both valves nearly, if not quite, equally gibbous: one valve being simply convex, the other having a trifling reversed undulation near the edge, and differing but little in the pattern. The auricles have not, as I have seen, been found perfect, they are, however, nearly so, and they then show an horizontal line on each side of the beak, with nearly perpendicular lineæ or striæ. I have one by favour of Dr. Sutton, which has nearly parallel lines with the hinge on the dexter auricle of the broader valve, with the broad costæ. This species is commonly found from three to seven inches in diameter. Mr. Strangewayes, from whom I have received several specimens, observes, that they are characteristic of the coarse Limestone of Ilminster. I have had other specimens from near Lackington, by favour of Mr. Strangewayes, also from Farley gateway, Gloucestershire; Carrington, Oxfordshire; and from Dursley, Gloucestershire. I believe the species is found in various other parts of England, and I have a specimen from France.

PECTEN fibrosus.

TAB. CXXXVI.—*Fig.* 2.

SPEC. CHAR. Depressed, orbicular, with a rectangular beak, nine or ten broadish diverging grooves and numerous sharp concentric striæ; ears equal, rectangular; margin undulated internally.

RATHER longer than broad; the back is formed of two straight lines meeting at an angle, sometimes greater, but seldom less than a right angle; the undulations within the margin are regular and rather deep. The striæ are composed of small very prominent sharp ridges that hold the shell firmly to the stone in which it lies.

This is remarkable at first sight for its broad and few sulci, and for the fine undulating transverse striæ all over them. I have but seldom seen it in pairs, but Mr. Strangewayes has a pair from Carrington, Oxfordshire, and I have an excellent specimen from the Chatley Cornbrash, by favour of T. Meade, esq. and a small one showing the inside from Oxfordshire. These last two are figured. Mr. Mantell was so kind as to send me one from North Leach, Gloucestershire, which has only 9 costæ, and Mrs. Gent has met with something similar, but plainer at Kellaways; if these should prove to be distinct species, I shall notice them again.

ASTARTE.

VENUS *Linn. Lam.*

GEN. CHAR. Suborbicular or transverse. Ligament external; a lunette in the posterior side; two diverging teeth near the beak.

THE shells of this Genus have three muscular impressions; the cartilage on one side and the lunette on the other, together with the general form, gives them a resemblance to those of the Linnean Genus, Venus. Their outsides have transverse undulations or reflected depressed costæ, which give the surface a natural character, by which they may be distinguished upon general inspection. Their edges are mostly crenulated within. There is one tooth less in the hinge than in Venus; the beaks are generally filled up, not hollow within under the teeth; there is also commonly an obscure elongated tooth at some distance from the beak under the lunette. Of this Genus there are several recent British species and many Foreign ones, all of which have hitherto been classed under Venus; of the former are Venus Scotica, (which may be taken for the type of the Genus) V. sulcata, Dannoniæ, paphia, fasciata, subcordata. It was not until I sought for the proper place in the system for the fossil species, that I perceived the necessity of making a new Genus, to which I have given the name of one of the Heathen Deities, sometimes styled Venus.

ASTARTE lurida.

TAB. CXXXVII.—*Fig.* 1.

SPEC. CHAR. Transversely oblong, convex, depressed, with many transverse undulations; lunette elliptical, sharp; margin crenulated within.

A RATHER thick shell with a straightish front, and arched back, half as wide again as it is long.

A blue sandy Clay in the Fox-hill quarries, Gloucester-

1815. XXIV.

shire, afforded Mr. Robert Taylor this perfect specimen, which he was so obliging as to communicate for general information. Mr. Taylor has also found it in coarse Limestone at Taunton.

ASTARTE elegans.

TAB. CXXXVII.—*Fig.* 3.

SPEC. CHAR. Transversely oblong, convex, depressed, with many small transverse costæ; lunette cordate; margin crenulated within.

MUCH resembles the last, but the front is not so straight and the back not so much arched; the teeth in the hinge are also more distant.

By favour of Mr. Strangewayes, from Babling-hill, Yeovil; it so matches the upper specimen that the opposite shells fit at the hinges; it differs, however, in shape a little, having a more graceful turn on the side from the lunette, more of Hogarth's line of beauty, the other being straighter: it is also generally rather longer for its breadth: it is a cast in Carbonate of Lime.

ASTARTE cuneata.

TAB. CXXXVII.—*Fig.* 2.

SPEC. CHAR. Subcordate, acuminated, gibbose, with small transverse costæ; lunette cordate; margin entire within.

THE back of this is broad and flattened; anterior side acuminated; the general form is a triangle, of which the posterior side is the shortest. I have not seen the margin perfect.

From Chilmark, near Tisbury, Wiltshire, a quarry, supposed to correspond with that of Chicksgrove; Mr. Jackson, some time before his death, brought me specimens, and Miss Benett has since favoured me with variety. Some specimens are neater and more regular in their striæ than others, being deeper and wider. The shell is replaced by Carbonate of Lime, which is sometimes crystallized; the stone in which they are imbedded is an earthy Limestone containing a small portion of green sand.

TEREBRATULA pectita.

TAB. CXXXVIII.—*Fig.* 1.

Spec. Char. Orbicular, gibbose, plicato-striated; with a flattish space extending from the front to the beaks; beak of the lower valve prominent, slightly incurved; back of the upper valve straight, with an incurved beak.

The length and breadth are nearly equal and almost double the depth: the plicæ are small, rounded, and often furcate, hence they are not much larger at the margin than at the beaks.

Furnished by the green sand stratum, at Horningsham, near Longleat, four miles west of Warminster, and may be considered characteristic of the stratum and is figured by Townsend and Smith. Mr. Meade has a larger specimen from the same place. The figure in the French Encyclopædia is hardly satisfactory enough to be determined.

TEREBRATULA Lyra.

TAB. CXXXVIII.—*Fig.* 2.

Spec. Char. Oblong, convex, with diverging furcated plaits; beak of the lower valve greatly elongated, that of the upper valve short, incurved.

Length of the upper valve equal to twice its width; the beak of the lower valve is probably equal to the length of the upper valve, it contains two longitudinal

Septa :* the upper surface is smooth, with a slight sulcus along the middle and a stria on each side of it; how it terminates is at present unknown.

This species is considered in the French Encyclopædia, where it is figured, as perfect at the perforated end, and although Mr. Meade and others have kindly lent me their best and most complete specimens, I have never seen one nearly perfect. The larger figure is about the size of Mr. Meade's largest specimen. Mr. Cumberland, indeed, considered it a new Genus and named it Lyra Meadi, in compliment to our worthy friend, whom I esteem so much, but the term Lyra is so apt I could not resist applying it to the specific name. The analogy of many species of similar construction, although not so much elongated, show that it cannot, with propriety, at present be separated from the perforated and plaited Terebratulæ, for want of distinguishing characters, (although they may hereafter be divided) till those further removed, being imperforate, are more settled.

I found some specimens in the green sand at Chute Farm, near Horningsham, chiefly silicized.

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* I have observed indications of similar septa in the beaks of some Spirifers.

PATELLA. *Linn.*

Gen. Char. Univalve, not spiral, more or less conical, concave and simple beneath; margin and apex entire.

This Genus includes at present only such shells of Linnæus's Genus Patella as have entire margins and are not perforated at the apex; their form varies from nearly flat with an umbo to obliquely conical, with a curved apex, and there is a gradual succession of forms from one shape to the other, therefore, I cannot see the propriety of constituting Genera founded upon the form of the cone only.

PATELLA latissima.

TAB. CXXXIX.—*Fig.* 1 *and* 5.

Spec. Char. Nearly orbicular, flat, smooth.

Shell very thin, concentrically undulated; the umbo is excentric; the margin forms a very short oval.

Fig. 1 shows a specimen from a slaty Clay impregnated with vegeto-bituminous matter, approaching the Kimmeridge coal, that occurs in Lincolnshire. The foliated form of the Clay seems to arise from the same pressure which has flattened the shell so as to crack the margin, and make it rather doubtful how flat it would be if perfect: the upper surface is still attached to the Clay, it may possibly be roughish, but this I have not been able to ascertain; however, there are characters enough

to distinguish it from most other species. The stratum it occurs in, may probably be recognized by it in some other place. There are several places in Somersetshire where Ammonites are found compressed in a somewhat similar Clay. It is worth while to examine whether this or any other species of Patella occurs with them.

Fig. 5 is from a shell, or rather the cast of one in a compact Limestone, found in a rolled mass among lumps of Chalk, Sandstone, and Gravel, at Pakefield, in Suffolk; the stone has a largely foliated structure; it contains Tellinæ, Ammonites, Vertebra, &c.* all compressed in the direction of the laminæ, but this Patella is not so much so as in the Clay, therefore, it is but little cracked at the edges.

PATELLA lævis.

TAB. CXXXIX.—*Fig.* 3 *and* 4.

Spec. Char. Depressed, conical, smooth, shining; base obovate; apex excentric.

A very smooth, even-formed shell, about one-third of its length high and rather slender.

I have two specimens of this. I believe it has hitherto been overlooked; the smaller one is from Whitby, where it was found in that inexhaustible formation, the Alum Clay, which, independantly of its value in the formation of Alum, has attracted notice from the many larger fossil productions, that in a manner eclipse this minute shell. The other specimen was found in Clay at Folkstone; I suspect it is a rare species.

* The same stone produced a Lingula figured at tab. 19. Mr. Thurtell sent me nearly the whole of it, and it has turned out very productive.

PATELLA equalis.

TAB. CXXXIX.—*Fig.* 2.

SPEC. CHAR. Conical, smooth; base obovate; back nearly perpendicular.

THERE are some faint signs of radii upon the surface of this; its height is nearly equal to its width; it is rather broader towards the front, and the apex, which is rather obtuse, is so excentric as to be almost perpendicular over the edge; the surface is covered with a light brown epidermis.

Good specimens of this are rarely found in the Suffolk Craig. Mrs. Cobbold favoured me with this from the Holywells estate near Ipswich.

PATELLA rugosa.

TAB. CXXXIX.—*Fig.* 6.

SPEC. CHAR. Depressed, obovate, radiated; apex excentric, depressed, slightly recurved; back concave above, with reflected undulations.

SYN. *Park. org. rem.* 3.

THE radii are rather numerous and strongly marked; the lines of growth are too faint to make a distinct decussation, but there are generally two or three large undulations around the shell which approach each other behind

the apex, and rise so much as to give the margin the appearance of having been rolled or gathered up, as one might gather up the edge of a woollen cap while holding it in the hand: the shell appears to be tolerably thick.

Hampton Common and Amberley Heath, near Minchinhampton, Gloucestershire, afford this shell, in Bath shelly Oolite. I have to thank the Rev. Mr. Newton for my specimen, a token of some years standing; it is characteristic of the bed in which it occurs, where it is not very rare, and is generally in a very high state of preservation.

PATELLA unguis.

CAPULUS. *Mont.*

TAB. CXXXIX.—*Fig. 7.*

Spec. Char. Depressed, suborbicular, obscurely radiated; vertex oblique recurved, extended beyond the base, acute.

A rather flat shell, being about one-third of its width high; the whole of the beak is solid; the other parts gradually growing thinner to a sharp edge. The recent Patella ungarica of Linnæus is so very similar to this fossil, that I doubt if a distinction can be found; if there be any it lies in the radii, which are very obscure in this, a circumstance that may be attributed to wear; the beak is, perhaps, less oblique, but in this it is variable. My specimens came from the Holywells Craig.

PLANORBIS. *Lam.*

GEN. CHAR. Univalve, discoid, involute; without septa; spire flat or impressed; aperture entire.

THIS Genus has been well separated from Helix of Linneus, it contains shells composed of a simple tube curved into a Volute; in many species the latter whorls partly embrace those preceding, but this is not the case with several shells which otherwise have a natural relation to the type of the Genus, so I have omitted that part of Lamark's Generic character which relates to it. The recent shells are inhabitants of fresh water.

PLANORBIS equalis.

TAB. CXL.—*Fig.* 1.

SPEC. CHAR. Equilaterally concave, with one obscure keel on the right side and two on the left; smooth; volutions exposed; aperture orbicular.

THE inside of the tube composing this is perfectly round, but the shell is thicker towards the front, so as to make the outer edge of the mouth obtusely obovate; the concentric carinæ are very obtuse and inconspicuous. There is a slight impression of the preceding whorl in the substance of the last.

A specimen of Limestone from Kendal afforded me this shell, it is replaced or cast in white Carbonate of Lime or Spathose Limestone, and is filled up with darker amorphous Limestone, which is somewhat of a redder

brown where exposed: there appear to be fragments of Entrochi also in the stone. The Planorbis resembles so much the fresh water Helices of Linnæus, that all the species have been considered by some as inhabitants of fresh water, but this would seem an exception.

PLANORBIS cylindricus.

TAB. CXL.—*Fig.* 2.

Spec. Char. Cylindrical, left side concentrically striated; volutions three or four, adpressed; aperture oblong quadrangular.

The aperture of this shell is transverse, being wider than long, nearly in the proportion of three to two; the angles are obtuse, and it receives no indentation from the preceding whorl. The shell is about three times its thickness in diameter, and the left side has six or eight obscure elevated striæ.

Some years since I was for a few hours at Cowes, on the Isle of Wight, and picked up a piece or two of stone which contained some of these shells, but as my time and immediate occupation did not allow me to extend my researches, I was content with what I had; this was in the severe frosty and stormy weather of February, 1808. I soon after visited by kind friend, Mr. Iremonger, at Wherwell vicarage, who gave me specimens he had from the Isle of Wight, on examining which I found several species of Planorbis and a Lymnæa much resembling Helix stagnalis of Linnæus, which I will add to this work hereafter.

The Planorbis here figured differs from Helix contorta in the whorls being more equal and angular on each side and less numerous: the figures are about the natural size of the best I have seen. The remains are shelly with a smooth inside: the outside shows the lines of growth.

PLANORBIS obtusus.

TAB. CXL.—*Fig.* 3.

Spec. Char. Depressed, left side most concave: volutions embracing, slightly compressed on the right side; aperture obliquely and obtusely obcordate.

The volutions are very few and much concealed, the obtuse rounding edge which gives the short obcordate form to the aperture distinguishes it from the next species: its thickness is equal to about one-fourth of its width: it is very pellucid and shining.

Found in the same stone as the last.

PLANORBIS lens.

TAB. CXL.—*Fig.* 4.

Spec. Char. Lenticular, subcarinated, volutions embracing; aperture very oblique, obcordate.

Altogether much flatter than the last, with the sides more equally concave; about one-sixth of its width in thickness; it much resembles the recent British Planorbis.

From the Isle of Wight, with the above and following species.

PLANORBIS hemistoma.

TAB. CXL.—*Fig.* 6.

Spec. Char. Depressed, smooth; right side convex, umbilicate; left side flat; aperture oblique, subtriangular.

A minute shell, seldom exceeding one line in diameter and a fourth of one in thickness: the volutions, although partly concealed by hanging over on the right side, make no impression on each other: the aperture is triangular, with the angles and one side rounded.

I picked this up in sand at Plumstead along with Cardium plumstediense and various other marine shells, Sharks' teeth, &c. The lower figures are magnified, the upper figure about the natural size.

PLANORBIS radiatus.

TAB. CXL.—*Fig.* 5.

SPEC. CHAR. Lenticular, radiated; left side umbilicate; volutions nearly concealed; aperture obcordate.

THIS is a strong shell; the radii are a kind of plaits gradually disappearing towards the margin and very sharp but not deep in the umbilicus: the mouth adheres, with swelling edges to the next whorl; about one-fourth of its diameter in thickness.

When describing the Planorbis in general, I could not help thinking it convenient to describe a shell from the micaceous green sand formation, and rather mixed with marine with fresh water products, and which may, perhaps, hereafter, with further information, lead to the separation of another Genus. It is remarkable for forming nearly the whole whorl on one side and having small indistinct inner whorls. In this green and micaceous sand we also find inner casts like fig. 8.

PLANORBIS euomphalus.

TAB. CXL.—*Fig.* 7, 8, *and* 9.

SPEC. CHAR. Depressed, subcarinated, concentrically striated; right side flat; left side largely umbilicate; aperture subtriangular.

WHORLS five or six, exposed, gibbose and rather angular on the left side, forming a deep umbilicus; the aperture receives a slight impression from the preceding whorl. The striæ are fine all over the shell, and here and there, upon the flat side in particular, are a few larger, more prominent ones.

This shell has been described as from the Isle of Wight, by Mr. Webster, in the Geological Transactions: my spemines are from the mass Mr. Iremonger gave me in 1808, containing several of the preceding species. I believe it differs sufficiently from the French species.

Fig. 8 and 9 represent casts, apparently of this shell, they were sent me by Mr. Davies, of Bath, found in the neighbourhood; occasionally such types may be useful: they are Limestone.

CIRRUS.

GEN. CHAR. Univalve, spiral, conical, without a columella; funnel-shaped beneath; volutions united.

MOST of the shells of this genus have round mouths, not indented by the last whorl, but united to it by an expansion and thickening of the substance of the shell. The apex is always elevated much above the base, and equally so at all ages of the shell; whereas, in Euomphalus, the genus nearest united to this, the apex is but little elevated, except sometimes in old shells, when the last whorl descends more than usual; from Scalaria it differs in the union of the whorls, and the want of ribs.

A shell of this genus is distinguished at once by the peculiar aspect of the funnel-shaped umbilicus which exposes the inner parts of the whorls. It is a curious genus, and would be considered a Turbo till modern discernment showed the necessity of nicer distinctions: having no columella it represents the whorl of some tendrils called Cirri, or a curled lock of hair, I have therefore named it Cirrus.

CIRRUS acutus.

TAB. CXLI.---*Fig.* 1.

SPEC. CHAR. Conical, sharp, with an obscure carina near the upper part of each whorl; aperture round.

WHORLS about eight; the height and the diameter of the base are equal: the volutions are united by only a small part of their surface, as is the case with most of the genus: the lines of growth are longitudinal, fine and regular.

This specimen was sent me long ago by Mr. Martin from Derbyshire; it is extremely neat; there are crystals of Carbonate of Lime within it.

CIRRUS nodosus.
TAB. CXLI.—*Fig.* 2.

Spec. Char. Acutely conical, spire reversed, with two obscure transverse carinæ, upon which are numerous longitudinally extended tubercles; aperture orbicular.

There are two rows of tubercles on each whorl, formed by the intersection of transverse and longitudinal ridges, the upper row is the largest, and the other is inconspicuous: the aperture seems from the cast to have been somewhat plaited.

Dr. Leach, at present so well known for his extensive researches into Natural History, some years since presented me with this specimen, picked up near Yeovil; it is a reverse shell, and seems to have been gregarious: two were here crowded together: there were signs of Ammonites in the mass. It has had apparently a very acuminated spire, seven turns of which remain, and the space above for as many more, according to the general proportions.

CIRRUS plicatus.
TAB. CXLI.—*Fig.* 3.

Spec. Char. Conical, transversely striated, base angular; sides flattened; umbilicus plaited or deeply striated; aperture oblong.

Base rather broader than the height; the aperture is subquadrangular, and wider than it is long. The angular form of the outer edge giving a flatness to the cone it would form if perfect, will help to distinguish this species: the lines of growth are indistinct, the creases or plaits in the umbilicus, which is rather small, and looks as if formed by the curvature of the shell, are a help to its name.

From Folkstone, by favour of Mr. Gibbs: it has, like other productions of that place, some of the original shell remaining, which is occasionally finely iridescent; the present is rather chalky. The inside cast is a mixture of ironey clay with lime.

TROCHUS similus.

TAB. CXLII.

Spec. Char. Conical, base rather convex, volutions squarish, with tubercles upon their angles, transversely carinato-striate, and a rounding elevation in their centers; lines of growth decussating the three central striæ.

The tubercles are numerous, rather depressed, but large, the striæ are undulated and pass over them; between the three central striæ which lie upon the elevated part of the whorls the lines of growth are seen very sharp, close and regularly arched: the columella is imperforate, and the interior of the shell is nearly plain, retaining but small signs of the tubercles: the aperture is square with rounded angles, and the inner lip is thickened, two characters not well expressed in the figure, which was taken from a handsome, but in this respect an imperfect specimen.

The Blue Lias at Weston near Bath, and in the neighbourhood of Yeovil, Lackington Park, Shotover, &c. abounds with this Trochus. Lister found it at Bugthorp, Yorkshire, and has figured it in his Conchology, f. 1036. It is found of considerable size, and more or less worn so as to disguise it in a way that makes it often difficult to distinguish the species. When most perfect it is very much ornamented with transverse undulating striæ, and often a rather conspicuous sort of belt, which has what some have occasionally denominated a herring bone marking. Among my specimens are several casts of the interior only; some are included in a mould of the outer surface, like the lower figure; and the space between

them contains a few crystals of carbonate of lime; other specimens have this space quite filled up, and the surrounding stone broken away; of such is the upper figure: some casts are beautified with octohedral crystals of pyrites.

A Trochus nearly resembling this is found in some parts of Normandy, but comparison will prove that they are distinct species.

CARDITA tuberculata.

TAB. CXLIII.

Spec. Char. Heartshaped, longitudinally radiated, radii tuberculated; valves equal, laterally compressed, longitudinally subcarinate, one side semilobate, the other nearly flat, beaks much incurved.

The length, breadth, and depth are in the proportion of 5. 4. and 3.; the radii are not deep,—they are numerous, and in sets of three or four, with more enlarged and conspicuous ones intervening.

The micaceous sandy strata dug through to make the Devizes canal, has afforded some curious casts and impressions of shells. The present was among others collected by the indefatigable and discerning Mrs. Gent, who has obligingly lent me the rarities of her collection to draw. The beauty of this specimen, and the tender adherence of the sand, infering the probability of time obliterating the greatest beauty of its ornamental striæ, I considered it a treat to preserve a resemblance of it, as every touch brings away some grains. It is rather obliquely compressed, as if by accident, yet it appears to be a compressed shell with elegant curved beaks. Should the same occur in greater perfection, we may possibly discover with certainty all its characters, in the mean time the utility of publishing it now will be appreciated by the information, which bids fair to lead the attention and elicit discovery.

CARDIUM semigranulatum.

TAB. CXLIV.

Spec. Char. Gibbose, transverse, subtriangular, longitudinally striated, posterior side straight, longitudinally sulcated, and largely granulated.

Very similar to the Cardium edule in general form, but often twice as large; it is a slender shell, smooth to the touch, but is covered with fine longitudinal striæ; upon the posterior side the striæ are enlarged and become sharp sulci, on the ridges between these sulci are many small irregularly globose tubercles or granules; the edge is minutely dentated.

Of this Cardium some large fragments were presented to me from Barton Cliff, by Miss Benett; I had previously received small ones by favour of the Rev. W. Bingley, and, in 1814, Mr. Bullock was so kind as to present me with a small, nearly entire specimen, from the Clay stratum, related to that of Highgate, in the Regent's Park, since which, in 1815, the same species has been found in the continuation of the same stratum, near the White Conduit House, at Islington. I do not know that it was ever found at Highgate, although many shells like the Highgate productions were found with it; it was accompanied in these places by two or three other species of shells not found at Highgate and some stems of Pentacrini, with the appearance of the shelly substance about them; none such were found at Highgate, and I am pretty confident no specimen of Argonauta was found there, although report has said there was.

This Cardium is very distinct from any of the Genus that I know, yet its general resemblance to those figured in tab. 14 would have found it a place near them had I possessed it at that time, and now I have no British congener to place with it: my best specimen is full of Pyrites, and may fall to pieces, for which reason it was advisable to secure a remembrance of it.

HELIX GENTII.

TAB. CXLV.

Spec. Char. Discoid, gibbose, smooth, with a spiral band along the upper part of the whorl; aperture large, expanded, elliptical.

Rather less than an inch high, and an inch and a half wide; the striæ of growth are rather obscure, except near the upper part of the whorl, where they run into a narrow sulcus that forms the spiral band.

I am favoured with permission to draw this pretty cast by Mrs. Gent, whose name I have given it in commemoration of that scientific zeal which trusted an unique tender micaceous sandy cast to travel so far. I presume it to be an Helix, as somewhat according with tab. 10 and the position of the band is probably a good characteristic distinction: it was gathered in the micaceous sand formation near Devizes.

PLEUROTOMA. *Lam.*

Gen. Char. An univalve, fusiform or subturreted shell; base of the aperture channelled; a deep sinus in the upper part of the outer lip.

The form of the mouth in fossil shells of this Genus is seldom distinguishable except in the lines of growth; the thinness of the outer lip renders it so liable to accidents. The general form is similar to that of Murex, Fusus, &c. The beak is straight, and the columella without plaits.

PLEUROTOMA attenuata.

TAB. CXLVI.—*Fig.* 1.

Spec. Char. Fusiform, base attenuated; longitudinally undulated; undulations five or six, with a large compressed tubercle at the upper end of each; volutions transversely striated; aperture narrow, straight.

The upper part of each whorl is nearly even, being only striated and is bounded by transversely compressed tubercles on the upper part of oblique undulations or costæ: over these and the remainder of the whorl are numerous small subtuberculated ridges with striæ between them. The aperture equals half the entire length of the shell: the beak is produced by the gradual tapering of the last whorl and is of the same length as the spire; the width is equal to one fourth of the length; a rugged aspect is given by the irregular lines of growth.

This species seems to be rare, I have only yet seen two pieces, found at Stubbington by Mr. Holloway. Although many species from that place agree with those found at Highgate and Barton, and the foreign ones, yet I believe this is found no where else.

PLEUROTOMA exorta.

TAB. CXLVI.—*Fig.* 2.

Spec. Char. Turreted, base conical, elongated; whorls concave and smooth above, below longitudinally undulated and convex; with many elevated subtuberculated lines; aperture ovate, elongated, canaliculated.

Syn. Murex exortus. *Brand.* f. 32.

Longitudinal undulations or costæ 12 or 14, rounded and strongest on the spire; the smooth concave part of the whorl is bounded by the commencement of the costæ which is rather sudden; length of the aperture, including the beaks, equal to two-fifths of the whole shell; the lines of growth are indistinct, but form small tubercles upon the transverse lines.

From Barton. It appears to be Murex exortus of Brander, or at any rate a variety approaching his M. macilentus. The Pleurotoma dentata of Lamarck, under which M. exortus is quoted, with a mark of doubt, is certainly distinct from any Hampshire shell I am acquainted with, as I learn from a French specimen sent me by Monsieur De France.

PLEUROTOMA rostrata.

TAB. CXLVI.—*Fig.* 3.

Spec. Char. Fusiform, with many transverse ridges and short costæ, volutions obscurely decussated, expanded and slightly concave above, rather ventricose and roughish below: aperture elongated, canaliculated.

Syn. Murex rostratus. *Brand.* f. 34.

Costæ numerous, obscure on the latter whorls; the decussations on the upper part of the whorls are very slight, but most distinct near the edge; the transverse ridges are quite free from tubercles, but are roughened by the lines of growth; the aperture and beak occupy half the length of the shell.

This species is found at Barton Cliff; it differs a little from Brander's excellent figure in the characteristic space on the upper part of each whorl, and the less acuminated beak, but it can only be a variety. I have seen part of a cast in micaceous sand, from the Devizes Canal, very like this, but it had not the collar, if I may so term it.

PLEUROTOMA acuminata.

TAB. CXLVI.—*Fig.* 4.

SPEC. CHAR. Turreted, acuminated, longitudinally ribbed, transversely striated; whorls above, concave, edge fimbriated; below sulcato-striated; aperture elongated, canaliculated, one third the length of the shell; beak broad.

THE costæ are numerous, pretty close and a little waved; the edges of the whorls are elegantly marked by the lines of growth so as to appear fringed; volutions about nine; width equal to about one-fifth of the length.

The narrowness of this shell and difference in other respects, from Brander's Murex macilentus, or any other of his shells, seems to confirm it as belonging, exclusively, to some other place; it was found at Highgate. It is a curious fact that different places, frequently in the same country and of a similar formation, should have such specific distinctions.

PLEUROTOMA comma.

TAB. CXLVI.—*Fig.* 5.

SPEC. CHAR. Turreted, beaked, with acute transverse rising lines; volutions smooth in the middle, with many short curved costæ; aperture ovate, canaliculated; beak slightly curved.

THE costæ extend only over the smooth part of the whorl, they are swelled at the upper part, curved and pointed below, something like a comma; the rising lines are few, sharp, even and most prominent near the middle of each turn: aperture about two-fifths the length of the shell.

Stubbington has afforded this shell to Mr. Holloway, and I figure it at present as rare, not knowing that it has been found elsewhere.

PLEUROTOMA semicolon.

TAB. CXLVI.—*Fig.* 6.

Spec. Char. Turreted, elongated, striated, with many curved costæ; whorls swelled with a granulated margin; base conical, decussated; aperture ovate, beaked.

The granulæ upon the margin of the whorls correspond with the costæ, which are long, narrow, curved, and swelled at the top: the beak is rather thick and obtuse; aperture one-third the length.

This does not appear to be a young shell although it is small, and as the characters are distinct and ripe, I was not willing to overlook it, not knowing of any other specimen of the same species. Mr. Holloway found it at Stubbington.

PLEUROTOMA colon.

TAB. CXLVI.—*Fig. 7 and 8.*

Spec. Char. Fusiform, striated; whorls concave above; with a crenulated margin, below with many rugged transverse ridges and small short longitudinal undulations; base conical; aperture elongated.

The transverse ridges alternate with the striæ, and in some specimens divide the undulations into two small tubercles; the crenulations on the margins are also sometimes doubled in the same manner: the beak is obtuse; aperture nearly half the length of the shell; the width is about one-third the length.

Probably this is not rare at Barton Cliff, I have figured two varieties which I at first thought might be distinct species, but intermediate specimens have led me to alter my opinion: the chief difference is in the longitudinal undulations, which in fig. 7 are very small and formed into a double row of minute tubercles or punctums, while in fig. 8 they are larger and scarcely affected by the transverse ridges, but in it the margin still retains the double row of punctums or crenulations. Can these be young individuals of Murex turbidus of Brander?

I have named the three last species from the resemblance of parts of their sculpture to the marks used in punctuation, as they afford terms easily remembered.

CERITHIUM funiculatum.

TAB. CXLVII.—*Fig.* 1 *and* 2.

SPEC. CHAR. Pyramidal, sides straight; whorls with four, nearly equal crenulated carinæ on each; base with several plain elevated ridges.

ALTHOUGH the carinæ are nearly equal, the uppermost or marginal one is rather the largest and the next the smallest; the carinæ look like closely knotted cords, twisted at equal distances round the spire.

This species was found at Plumstead, in a gravelly soil, with other shells formerly described. Before comparison, it so much resembled those of fig. 3 and 4 from Charlton, that I thought them the same species. I presume, however, they are different enough to be considered distinct.

CERITHIUM intermedium.

TAB. CXLVII.—*Fig.* 3 *and* 4.

SPEC. CHAR. Pyramidal, sides straight; whorls with a largely crenulated margin and five or six unequal carinæ on each; base with several elevated ridges.

THE difference between this and the last lies principally in the irregularity of the carinæ; the upper carina is so near the edge, so large and so deeply crenulated, that it forms a margin or border to the whorl; the others are unequal both in distance and size, and are either plain or irregularly subtuberculated; the lines of growth in both are sharp.

I have found these most abundantly at Charlton in a stratum of Clay above the sand, and rarely, if at all, elsewhere, although not easily distinguished till compared, and as difficult to describe; C. funiculatum from Plumstead, and C. funatum, tab. 128 are great resemblances, especially when more or less worn, as in fig. 3.

CERITHIUM dubium.

TAB. CXLVII.—*Fig. 5.*

Spec. Char. Turreted; whorls with a row of compressed tubercles near the middle, and two transverse rows of lesser tubercles below; base with one or two rows of tubercles.

The tubercles of the upper row are transversely compressed and sharp, they are placed at about one-third the length of the whorl from its upper edge.

Mr. Holloway found the present specimen at Stubbington and he has found Cerithium giganteum there, from which it would appear to accord with some of the French formations. This may possibly be a large variety of Cerithium calcitrapoides of Lamarck, described in his account of the Fossil shells found in the environs of Paris, p. 82.

CERITHIUM melanioides.

TAB. CXLVII.---*Fig. 6 and 7.*

SPEC. CHAR. Turreted, obscurely longitudinally undulated; whorls convex, bearing above the middle a largely tuberculated carina, below with two or three transverse tuberculated carinæ; beak very short.

A handsome shell, differing from the last in the bluntness of the tubercles, which have a less coronated form, and in the lesser number of volutions; it is smooth, generally shining; the lesser carinæ are about four, constant on the lower part of the whorls, but near the middle often little better than two elevated striæ or even quite wanting: the mouth is almost round; the beak is very short, if any, but I have seen no perfect specimen.

The peculiar abundance of this species at Charlton appears to claim for it a distinction. Fig. 6 is the whitest specimen I have seen, which I gathered there. Miss Rashleigh sent me a fine specimen, gathered at Southfleet, which is a variety with the smaller bands in conspicuous risings, and according with a specimen found in Clay above the Chalk, at Newhaven, by G. A. Mantell, Esq. who also sent me some marked Hamsey. I have also found it on the banks of the Croydon canal, near the Kent road, among gravel.

A figure of this Cerithium is given in the second plate of Smith's "Strata, identified by organized Fossils."

OSTREA deltoidea.

TAB. CXLVIII.

SPEC. CHAR. Equivalved, flat, thin, orbicular, with a deep sinus on one side, and a produced straight beak.

SYN. Ostrea deltoidea. *Lamarck Env. de Paris*, p. 265.

So flat is this oyster that there is very little room for an animal between the shells; the back part is elongated with parallel sides for a short space, forming a kind of neck terminated by the hinge: the pit of the hinge is of equal width with it: the front is rounded and produced on one side in a lobe which, together with the beak, forms two angles of a triangle, and gives the outline the general form of the letter D or Δ; the shell is thin, the edges extend far beyond the interior surface, especially about the neck, and make the external outline more orbicular than the internal.

This oyster is a sort of proof of a characteristic constancy in shape that nothing can contradict, however, we might suspect otherwise in so variable a Genus; thus this species is known to all who have once recognized it, without any difficulty. The extreme flatness,* even when the shell is attached to more gibbous species, were it not constant, might be attributed to some pressure, for the space that the animal might have occupied seems insufficient to have allowed of its existence, and the shell possessing the usual characters of its tribe, the tripartite hinge, the multiplied lateral laminæ, &c. we should have

* Connecting the idea of flatness where there is much variety of colour is sometimes more difficult than might be expected, as dark tints generally serve for relief.

thought could not have exhibited them in so flat a form but by some accidental means, such as growth or pressure betwixt two rocks: that either should be so constant or so precisely regular, if admitted, would yet become an insurmountable circumstance, as they are found in a soft loose Clay on Shotover hill, which consists for the most part of an hardish Limestone, where numerous species of shells and animal remains, not compressed, are found, but none of these oysters; at least I could not find any of the same apparent species among the beds of stone. The species is most commonly known at Oxford, &c. as Heddington oysters: it is also found near Cambridge. Mr. Edward Bridgman found it at Lopham, in Norfolk, specimens of which were brought me by the Rev. Mr. Lambert. Miss Benett found great variety at Sandfoot Castle, near Weymouth, and favoured me with specimens, some of which are deeper than usual.

GRYPHÆA dilatata.

TAB. CXLIX.---*Fig.* 1.

SPEC. CHAR. Orbicular, obscurely lobed; upper valve flat, lower valve hemispherical.
Var. β distinctly lobed, Fig. 2.

SHORT as the beak of this is, it curves enough in most specimens to mark the Genus, besides this, the regular concavity of the lower valve and its lobed form are sufficiently characteristic; the back of the flat valve in old specimens is straight and occupied by the hinge pit, which is not curved, and consequently diverges from the curved pit in the other valve; the lateral lobe varies, in some specimens it is very distinctly defined, in others obscure; but it may always be traced; the var. β has the lobe very strong and produced in both valves.

This, and the varieties into which it sports, are not rare, it is, therefore, necessary, if possible, to distinguish its characters as a species. The hinge, at first sight, and in a single specimen would appear to be nearly sufficient to generalize it, and is certainly of much use, although many varieties of different species of oysters have some approach to the characters peculiar to Gryphites, such as the curved beak and the lobe or sulcus: the great breadth and uniform concavity of the deep valve with the gaping hinge appear to be the essential characters.

The upper specimen and some larger varieties, measuring eight inches and a half diameter, I have had long since from Suffolk, by favour of Dr. Sutton. An odd variety, very broadly aggregated, with the side laminæ more extravagant than the one figured, was brought me from Pakefield. I have one with many Vermiculæ and

part of an Ostrea delta attached to it, from Sandfoot Castle, near Weymouth. The same species is also found at Born, in Lincolnshire, where it is called the Sickle oyster: at Brambery hill, Brora, in Scotland, of a large size; (the latter I have by favour of Mr. Farey;) and at the following places: near Broomham, Somerset; Rude Cliff, near Osmington; Radipole and Portland, like fig. 2; Coney Weston; Ilminster; near Woburn; Farley gate, Gloucestershire; Bennington, Herts, generally of a reddish colour; and with other shells on the high range of hills bounding Romney Marsh, in Kent.

Calne affords varieties of this species: my friend, Thos. Meade, Esq. has a fine oval specimen, wide and deeply hollowed, from the Clunch Clay bed, 200 feet thick, near Calne. The deeper variety is said to characterize the Stratum, and is common throughout Somersetshire, Wiltshire, Oxfordshire, and Bedfordshire, where they are found waterworn.

TEREBRATULA acuta.

TAB. CL.---*Fig.* 1 *and* 2.

SPEC. CHAR. Ovato-triangular, slightly transverse; middle elevated by one large acutangular plait; sides with one large and several small plaits each.

THE sinus in the front of this is nearly an equilateral triangle, with slightly rounding sides; the lateral plaits are seldom more than two on each side, the first is large, sharp, and extends almost to the beak, the others are little else than marginal undulations.

Mr. Richard Taylor, jun. having sent this as found in the coarse Limestone of Staunton hill, Gloucestershire, and as it is rarely met with, I thought it desirable to see a figure, and as I have also received it from my kind friend, Mr. Strangwayes, from the coarse Limestone at Ilminster, it became the more convenient to publish a designation of it, and still further, as I have received the same species from France. It suggested its own name, by which it may be easily recognized. The British specimens that I have seen are much worn. The French one is a less transverse variety, also more acute in its form, with a straighter front and greater elevation of the middle: fig. 1 is a representation of it for comparison.

TEREBRATULA resupinata.

TAB. CL.---*Fig.* 3 *and* 4.

SPEC. CHAR. Oblong ovate, front depressed by a large rounded plait, sides elevated, rounded: lower valve obtusely carinated, with a sharp beak and a longitudinal ridge along each side.

LENGTH about one-fourth greater than the width: the sinus on the front is rounding in the middle with straightish sides; the lower sides of the shell are rounded and entire; the carina of the lower valve is very broad and rounded.

Mr. Strangwayes sent me this from Ilminster, he found it in the coarse Limestone: it is remarkable for being the reverse of the preceding species or resupinate in comparison with it; on which account, although a plainer shell without plaits on the edges, it has so general a resemblance at first sight, that the two have been laid together as the same species. I believe neither are yet commonly known; all that I have yet seen have an ochraceous tint.

CASSIS bicatenatus.
TAB. CLI.

Spec. Char. Ovate, ventricose, with many depressed transverse ridges, decussated by small longitudinal costæ towards the upper parts of the whorls; aperture ovate; left lip obscurely tuberculated.

Between each of the ridges is a flat space rather wider than the ridge, in the middle of which is an elevated line: the costæ are most distinct upon the central whorls, they give a chain-like appearance to two or three pairs of ridges: the aperture is ovate, indented in the upper part by the body of the shell; the right lip is thickened and crenulated within; the columella plaited and expanded into the left lip, which is flat and extended over the open umbilicus.

This prize was found by the Rev. J. Lambert, of Trinity College, in the Crag at Bawdsey, Suffolk. There is no doubt of its being a Buccinum of *Linn.* and a Cassis of *Lam.* Morio of *Montft.* although the columella is plaited. We prefer Cassis, and use it; we must confess we have not seen the perfect termination, but enough of it is preserved to show what genus it belongs to; the dotted outline is added from Buccinum gibbum *Linn.* which bears a great resemblance to it, as does also Bucc. bilineatum, see *Lister* 998; it might indeed deserve that term as it is bilineated in some parts.

This is a curious proof of the antiquity of the formation, as it by no means agrees with any of the recent shells on our shores as the Murex contrarius *tab.* 23, and Murex striatus, *tab.* 22, of the same formation, are supposed by some to do.

LIMA. *Lamarck.*

GEN. CHAR. A longitudinal inequilateral eared bivalve; hinge cartilage partly external, attached to a pit in each valve, placed on diverging surfaces between the beaks; beaks distant; valves gaping a little laterally.

THE peculiar conformation of the hinge of the shells of this Genus has caused them to be separated from the Ostreæ of *Linn.* or Pectens of late Authors, which they resemble in almost every other character, for most of them are longitudinally ribbed, and have distinct ears; the line of the hinge also is straight and the hinge pit triangular; it is the distance of the beaks from each other and the external situation of the cartilage that distinguishes them: there is also a degree of obliquity in the valves that forms a natural character. The Generic name is taken from a specific one of *Linneus's*, and is applicable to most of the species, particularly the known recent ones, all of which are decorated by deflected laminæ much resembling a rasp to the touch.

LIMA gibbosa.

TAB. CLII.

Spec. Char. Elongated, gibbose, smooth, longitudinally plicated in the middle; ears undefined.

Syn. *Lister* 495. ?
Walcot f. 22. ?

Nearly twice as long as wide, slightly oblique, in the middle about 18 small sharp plaits without any scales or even roughness. The ears are hardly worthy of that name as they are only expansions of the sides from the ends of the hinge line: the depth is greatest near the commencement of the beaks, where it almost equals the width. I have some doubts about the propriety of calling this a Lima; the form of the hinge corresponds, but the want or imperfection of the ears and the valves not gaping are objections; there are, however, some recent species of the Genus, which nearly resemble it in these particulars.

Cotswold hills, Gloucestershire, and Taunton afforded this to Mr. Richard Taylor, jun. with a small Isocardia of *Lam.* and other shells in coarse Limestone with granulæ like the small Oolite of Bath, &c. and I believe the species has been found near Bath, but has not been understood: I presume it will soon be better known.

Some of this Genus, at first sight, appear like Plagiostoma, but by careful examination may be distinguished by the thickness of the shell in the hinge, and the presence of the hinge-pit, both of which are readily seen in my specimen.

UNIO crassissimus.

TAB. CLIII.

Spec. Char. Ovate, transversely undulated or imbricated; beak recurved, acute; posterior side short, round; anterior side obscurely subcuneiform; shell very thick.

The hollow below the beaks is deep in consequence of the beaks being much incurved towards the posterior side; the cartilage slope is rounding and the front nearly straight: length two-thirds of the width. The shell is convex outside and in thickness equal to the internal depth; the hinge is particularly massive.

Mr. Wood having figured Mya crassa as a thick shell in tab. 20 of his General Conchology, I must now use the superlative degree of the word to this Mya of *Linn.* but Unio of later authors, and thus, in some measure, designate the species. I have had the specimens by me for some years, favoured by Dr. Sutton, of Norwich, and was pleased to find sufficient of the hinge to determine the Genus, which has puzzled Mr. Parkinson, who has, not without doubting, made it a Donax. This Gentleman observes they are usual in Gloucestershire and Wiltshire, near Bath, sometimes in the Lias Clay. Dr. Sutton gave me many specimens of Fossil shells as British, without localities, among which are several of this species, all formed of Carbonate of Lime: upon opening one of the pairs the hinge was found concealed among equiaxed crystallizations (British Mineralogy tab 13) beautifully showing the manner of modification, &c.

The imbricated surface and great thickness of this species seems at first to place it at a distance from others of the Genus, but there are many, both recent and fossil, to associate with it, and perhaps some of the characters may hereafter become Generic distinctions. I show a few more of this family on the next plate to make them more familiar: their external characters are sufficient to connect them, although we cannot always separate the valves as we have done in the present specimen.

UNIO Listeri.

TAB. CLIV.—*Fig.* 1, 3, *and* 4.

Spec. Char. Cordate, transversely imbricated, beak recurved, acute; posterior side small; middle flattish; shell thick.

The front of this species is sharper or more wedge-shaped than is usual in shells of this Genus; neither the posterior side nor the cartilage slope are so round as in Unio crassissimus: the breadth is but very little greater than the length.

This always puts me in mind of Lister's "*Musculus fluviatilis ē fluvio Thamesi ad Battersea*" tab. 184, and the varieties of Unio ovata in part corresponding with his figure and which I find occasionally at the same place, wherefore I have named it after him. Fig. 1 was sent me from Durham, as found in that neighbourhood some years since in Clayey Limestone: it accords much with some smaller mutilated specimens from Suffolk, by favour of Dawson Turner, Esq. and from an etching by favour of Mr. Richard Taylor, it appears to be found in Roydon gravel pit, near Diss, in Norfolk, rather more perfect and plentiful: but if the same species they differ a little in the state of preservation, being apparently less smooth, and formed of a lighter coloured Carbonate of Lime. The specimens, fig. 3 and 4, are from Scarborough; the smallest is a young shell before it has acquired its cordate form, from my friend Mr. Strangewayes, who found several specimens there; the other I bought of a dealer from thence. Perhaps this is the "thick ovate shell, a little depressed, found at Malton and Seamer quarries, in length two inches and a half, in breadth three inches;" mentioned in Scarborough Fossils, p. 103, where it is put under the Genus Tellina.

I figure these on a presumption that they may lead to information, should any one find them and determine that they belong to the Genus Unio or otherwise; as far as I yet know, specimens exposing the inner construction have not been found.

UNIO hybrida.

TAB. CLIV.---*Fig* 2.

SPEC. CHAR. Oblong, ovate, anterior side subacuminate; surface imbricated; beaks recurved, acute; shell thick.

THIS differs from the recent Unio ovatus principally in the largely imbricated surface and thickness of the shell with the acute beaks; breadth about twice the length.

The specimen figured is from Nottinghamshire.

VENUS. *Linn.*

GEN. CHAR. An equivalved rather inequilateral bivalve with three hinge teeth in each valve, converging towards the beaks; ligament external, placed upon the anterior slope.

THE shells of this Genus have generally a cordate impression under the beaks, and their form is more or less orbicular or transversely oblong; their edges are often crenate; the shell smooth and ornamented with various elevations, mostly running in a transverse direction, while the colours that so frequently enliven their surfaces are placed longitudinally, zigzag, or irregularly, so to produce great beauty and much pleasing variety: the anterior side is generally more or less defined by an angle or the abrupt termination of the transverse ornaments.

The Genus Venus as defined by Lamarck is distinguished from other shells which Linneus included under the same head, by Linneus's own character, the number and position of the teeth in the hinge; in conformity with this I found it necessary to form the Genus Astarte of such shells as have only two teeth in each valve. Other shells of the Linnean Genus Venus are arranged by Lamarck under his new Genus Cytherea, and distinguished by an additional tooth separated from the rest and placed under the lunula or posterior slope. But as there is no other difference, he seems himself to doubt the propriety of the separation, and I am unwilling to adopt it because the additional tooth is sometimes very small and seldom possesses the regularity of the other teeth. I have figured already two species of genuine Venus, *lineolata* and *plana* tab. 20. I have also figured two others as of this Genus, V. *equalis* and *angulata*, tab. 11 and 65, but they, together with Venus Islandica, which they much resemble, differ from Lamarck's character in the disposition of the teeth under the beak, and possess in one valve, besides them, a lamellar elongated tooth within the anterior side: these may, perhaps, hereafter form a good Genus.

VENUS incrassata.

CYTHEREA. *Lamarck.*

TAB. CLV.---*Fig.* 1 *and* 2.

SPEC. CHAR. Orbicular, oblique, subdepressed, smooth; posterior slope straightish; lunula large, obscure; edge entire; a conical tooth under the lunula.

SHELL very thick, the anterior slope concave, holding the ligament; the central tooth of the hinge thick and blunt, but not bifid; the detached conical tooth which would make it a Cytherea, is small, but sharp, opposed to a corresponding hollow in the opposite valve: the lines of growth are fine, and very numerous near the edge.

I received this some time since from the Rev. Mr. Iremonger, from Brackenhurst, in the New Forest, Hampshire; it is sufficiently distinct from any other that I know. The specimen is very entire, and the two shells were so perfectly locked together by the narrow hinge tooth, between the two most adjacent ones in the opposite valve, that it broke in separating them. The gloss, in some measure, remains both outside and within, the former was apparently brown when fresh, the latter white; both are now stained with grey streaks and blotches. The specimens seem to have lain in a loose earth. I should suppose if the place were searched it would afford some well preserved reliquiæ.

VENUS gibbosa.

TAB. CLV.---*Fig.* 3 *and* 4.

SPEC. CHAR. Orbicular, gibbous, with many transverse rugæ; lunula large and short; edge subcrenulated; hinge rather large.

VENUS rugosa is something like this, but that is shorter and less gibbous and has a much smaller lunula: its hinge also is much smaller: both have rudiments of a tooth under the lunula in each valve, but without corresponding impressions.

I have only received one specimen of this shell, some few years since, from Suffolk, and I consider it a variety. The present active spirit of research will in due time prove if it be more common than I expect. It is in a tender chalky state, and I conceive it proper to secure it as I think it is sufficiently distinguished to be recognized by moderate specimens. Its outer coat, with the rugæ, which it seems once to have been ornamented with, has split away: I cannot, therefore, say whether they were like those of V. rugosa or not.

CARDIUM proboscideum.

TAB. CLVI.---*Fig.* 1.

Spec. Char. Suborbicular, gibbous; anterior side straight, about 20 longitudinal rows of large canaliculated spines, with two rows of lesser ones between each cover the surface.

This corresponds in form with Cardium ciliatum, but the disposition of the rows of spines is altogether different and the shell is thicker: a few of the last formed thorns on the posterior side are very large and clumsy, and serve to relieve the elegant proportion of the others.

This elegant shell very rarely remains so finely replaced and in so extraordinary a manner as this specimen in semitransparent calcedony, covered by Cachalong, becoming transparent when wet and more opaque when dry. I am favoured with it by Miss Hill, from Blackdown, near Cullumpton, Devonshire. The larger doubled aculei are elegantly cast and with extreme neatness, as well as the two smaller rows, making generally three sets of aculei, and distinguishing it from any recent species: a few of the aculei are widened in an extraordinary manner, but they appear as if they were so in the original or recent state of the shell. It may be expected that the Lime of the shell has been carried away with the acting fluid that held the Calcedonic matter in solution to fill the space by some chemical means, with which we are as yet unacquainted. What information we may gain on this point by means of our new apparatus, we know not. The sand in which

this action has taken place is of an hard or harsh gritty feel, with particles of Mica; the whole more or less concreted. These and other shells I have, and shall occasionally show are very abundant in it, all in a silicized state.

CARDIUM umbonatum.

TAB. CLVI.---*Fig.* 2, 3, *and* 4.

SPEC. CHAR. Orbicular, gibbous, nearly equilateral, longitudinally striated and obscurely costated; anterior edge concave, and angular above.

LENGTH and breadth three-fourths of an inch; the costæ are so little elevated that the edge is nearly entire, but the margin is strongly toothed within; the anterior side is separated by a concavity, so that the upper angle of it forms a sort of boss; it was formerly thought to be the young of our common Cockle, *Cardium edule*; the evenness of the contour and the concavity around the anterior side will, I trust, always distinguish it, with very little difficulty.

Also from Blackdown and silicized: very neat specimens frequently occur. Fig. 4 shows an accidental canal of which there are slight vestiges in several specimens.

AMMONITES Duncani.

TAB. CLVII.

SPEC. CHAR. Depressed; inner whorls partly exposed; radii numerous, undulated; edge flat, bounded by two rows of tubercles in the interior whorls; a few tubercles occur upon the sides of the inner whorls: aperture ovato-sagittate.

THE radii are irregularly furcate, and more or less obscure about the middle of the sides: the tubercles on the interior whorls extend over the ends of two radii, but on the external whorls they are little more than swellings of the ends of the radii: the greatest diameter is about twice the length of the aperture and four times the thickness.

There is a peculiar elegance in this species that makes us regret its rarity, and the little chance we consequently have of seeing the exterior. The double row of button-like protuberances on either side the flattened outer edge, shewing the place of the siphuncle in the center, gives an appearance similar to that of some other species. The fine sharpness of the sinuated edges of the septa is beautiful. It has protuberating vermiculæ-like risings about it which interrupt the distinction of the whorls:—or are they stalagmitical droppings of pyrites? It is partly chalky on the outside, perhaps owing to the decomposition of the calcareous shell; the rest is pyritaceous except a little marle. It is from the forest or fen clay which runs through England from Weymouth to the wash of Lincolnshire, and was found by John and Philip Duncan, Esqrs. after whom I am pleased that it is named, at St. Neotts, Huntingdonshire.

PECTEN Beaveri.

TAB. CLVIII.

Spec. Char. Depressed, orbicular, smooth, with irregular longitudinal costæ; ears as wide as the shell, nearly equal.

The costæ vary in size and distance in the same shell, and there are between the principal ones now and then a small one or two: the shell is thin.

Among many specimens I have not seen so perfect an example to identify the species as this, lent me from the Oxford Museum, to which Mr. Beaver presented it; it is from the Rev. Mr. Beaver's quarry at Childrey, near Wantage, Berkshire. I take advantage of the opportunity thus allowed me of publishing the species; at the same time I beg leave of my friends and correspondents to say, that I shall still be glad of information or specimens, as it is very irregular in some of its characters, and the outside is as yet but imperfectly known. I have specimens of the same from Hamsey, Sussex, which Mr. Mantell kindly sent me, that identify a similar stratum (Chalk marl), but the shells being more mutilated and smaller, may indicate something relating to its age.

The upper figure is from an impression of the shell taken in clay; I have been able to seperate a portion of the shell from a Hamsey specimen, sufficient to shew that it is smooth: this figure, therefore, exhibits the outside: the lower figure shews the inside of the shell which adheres by its outside to the stone, or rather hard marley chalk, in which it lies. There are a few spots of pyrites about it.

SANGUINOLARIA.

GEN. CHAR. A transverse equivalved bivalve, superior margin arched, sides slightly gaping; hinge with two approximating teeth in each valve, and an external cartilage.

THIS genus forms a link connecting Solen with Tellina; it contains shells whose hinge is analogous to that of some Solens, but in general form they differ much, resembling Tellina in their flatness and rounded margin, but are generally wider. They have been happily selected from among the Solens of Linnæus by Lamarcke.

SANGUINOLARIA Hollowaysii.
TAB. CLIX.

SPEC. CHAR. Depressed, transversely elongate, ovate, and striated; anterior side gradually expanded; posterior side very small.

LENGTH equal to three and a half times its width; the lines of growth form fine sharpish striæ; the beak is minute, from it a slight depression extends towards the anterior side: the shell is thin.

This was gathered at Bricklesome Bay by the friendly Mr. Holloway, whose name I feel pleased to commemorate, four or five years since: although it is rather an abundant species it is rare to find one individual at all perfect: the pair figured here are held together by green sand; they are brittle: one shell is perfect, the other has been partly broken away so as to shew the hinge, and but little more is seen: it will readily be recognized if found again, and is at any rate a valuable addition to the catalogue of British fossil shells.

MACTRA.

Gen. Char. An equivalved subequilateral transverse bivalve, gaping at the sides; a ligament placed in a pit between the teeth of the hinge within the beaks; two elongated lateral teeth in each valve.

Most of the shells of this genus are free from striæ or other ornament; their form approaches to transversely oval; some are very flat, others are gibbose, and many have but a slight opening at the sides when the valves are closed: the lamellar lateral teeth of one valve are inserted into long grooves bounded on the inner side by plaits or lamellar teeth in the other: in several species both these teeth and the grooves are finely striated in a perpendicular direction.

Lamarck has confined his genus Mactra to such species of the Linnean Genus as have prominent lateral teeth; the remainder form the genera Crassatella and Lutraria.

MACTRA arcuata.

TAB. CLX.---*Fig.* 1 *and* 6.

Spec. Char. Ovate, smooth, back and anterior margin arched; shell of an uniform thickness; posterior side smallest; hinge narrow.

Length equal to about four-fifths of the width: the lines of growth are strongly marked: it differs from Mactra solida in the narrowness of the hinge and the irregularity of the sides. The lateral teeth are striated.

Mrs. Cobbold sent me these fine specimens from the Holywell Crag pits in 1813: they had been compared with and received the name of Mactra solida of *Linn.*

MACTRA dubia.

TAB. CLX.---*Figs. 2, 3, and 4.*

SPEC. CHAR. Ovato-triangular, transversely elongated, smooth, thickened towards the margin, sides equal.

THIS is between M. solida and stultorum; it differs from the last only in being wider and thickened towards the edge: the lines of growth are conspicuous, and more particularly so when the surface has been corroded, a circumstance generally observable in bivalve Crag shells.*

I received a specimen of this species nearly as large as the last, by favour of Dawson Turner, Esq. but broken; I therefore figure smaller but more perfect specimens received since from the Rev. G. R. Leathes. I have had the same, smaller still, from Mrs. Cobbold at Ipswich, and from Woodbridge.

MACTRA ovalis.

TAB. CLX.---*Fig. 5.*

SPEC. CHAR. Oval, equilateral, smooth; thickness uniform.

LENGTH about three-fourths of the width: its regular oval form distinguishes it: it is also rather deeper than M. stultorum.

A Crag shell, sent me from Suffolk by Dawson Turner and W. J. Hooker, Esqrs.

MACTRA cuneata.

TAB. CLX.---*Fig. 7.*

SPEC. CHAR. Ovate, smooth, depressed towards the front, anterior margin acutangular.

LENGTH but little more than half the width; the anterior side is largest and angular.

These are from Bramerton-hill near Norwich, found by my late friend Charles Wilkinson, Esq.

* Nothing shews the necessity of nicety in description more than the difficulty of discriminating the recent from the diluvian or antediluvian species: the accordance in the outside when worn, in most of these species and of Pennant's figures, has conveyed an idea of all being the same.

TELLINA.

Gen. Char. An equivalved inequilateral bivalve, more or less transversely ovate, with the anterior side irregularly bent: hinge slender, with two or three diverging teeth, and one or two elongated lateral ones.

Lamarck's principal distinction of this Genus is the bend or waving of the anterior side of the shell, and the lateral tooth or teeth. The individuals are mostly slender, compressed, smooth or striated, and white or elegantly painted; there is something in their general contour, partly produced by the above-mentioned bend, although in some species it is very slight, that indicates the Genus they belong to, and an inspection of the hinge soon determines it, for there is an apparent nakedness about it arising from the slenderness and simplicity of its parts, that makes it easily distinguishable. The cartilage is external.

TELLINA obliqua.

TAB. CLXI.—*Fig.* 1.

Spec. Char. Nearly orbicular, convex, oblique, smooth; anterior side slightly defined by a longitudinal wave.

The length and breadth are nearly equal; the depth of each valve is about one-sixth of the diameter; the anterior side is the smallest: the lines of growth are irregular, but rather sharply marked, and the spaces between them are rather elevated.

This species is common in the Crag of Norfolk, Suffolk, &c.; the large specimen. fig. 1, was among many by favour of the Rev. G. R. Leathes, from Suffolk: the smaller one beneath, from Aldborough, sent me by the Rev. J. Lambert, is of the more usual size. I have had pairs from Ipswich, sent me by Mrs. Cobbold, who finds them fine, of all sizes, and varying in colour. Messrs. Turner and Hooker have also favoured me with specimens of this species among some varieties of the following: they vary a little in general form.

TELLINA ovata.

TAB. CLXI.—*Fig.* 2.

Spec. Char. Ovate, convex, smooth, equilateral, with a slight wave upon the anterior.

Breadth one-sixth greater than the length; the lines of growth are sharply cut and very irregular; the spaces between them generally flat.

This is less circular than the last, and is found varying in size and colour, depending, like the others, on the quantity of oxyde of Iron in the bed in which they are situated. They are found at Framlingham and Bramerton, and in various parts of Suffolk.

CYCLAS. *Bruguiere.*

Gen. Char. An equivalved inequilateral bivalve, more or less transverse, with the anterior side even: hinge strong, with two or three diverging teeth and one or two elongated ones: cartilage external.

An intermediate Genus between Venus and Tellina; it has the general form of Venus, with the lateral tooth or teeth of Tellina, from which, however, it differs, in being straight and less slender. The species do not present much variety of ornament, either in form or colour, and in most of them there is no lunula, and the edges are entire: several of the recent ones have a strong epidermis.

Venus Islandica of Linn. is a Cyclas of Bruguiere; this, and one or two analogous fossil shells, which I have published as of the Genus Venus,* I still suspect may form a new Genus distinguished by the hinge.

CYCLAS deperdita?

TAB. CLXII. — *Fig.* 1.

Spec. Char. Ovato-transverse, rather gibbous, umbonate; lines of growth elevated, irregular: central hinge teeth three, lateral ones two.

Syn. Cyclas deperdita. *Lam. Env. de Paris* 252. *Park. Org. rem.* 3. 189 ?

The form is a short oval, rarely a little angular towards the anterior side: two of the central teeth of the hinge are slightly bifid: the lateral ones sometimes finely striated perpendicularly, as in several others of the Genus.†

This is a common species at Charlton, along with the two following, and two or three species of Cerithia, forming together a stratum several feet in thickness, in

* See the Generic character of Venus, p. 125.

† I have a large species from China that shews the striæ very strongly.

which there is a mixture of black Clay: it lies between strata of ochraceous Clay and gravel, over a bed of white sand about an hundred feet deep, that rests upon Chalk. Some shells contain enough of the animal matter to give them consistency, and have a shining surface: I have one pair in which the cartilage of the hinge remains, others are chalky and moulder between the fingers. The same species occurs in sand at Plumstead, of all sizes, even to minute.

I suppose Parkinson considers it the same as the following species, which he figures as C. deperdita of Lamarck, but is too angular to answer Lamarck's description: not having seen the French shell I am still in doubt.

CYCLAS cuneiformis.

TAB. CLXII.—*Fig.* 2 *and* 3.

Spec. Char. Transversely cuneato-ovate, gibbous, lines of growth numerous, fine; central hinge teeth three; lateral ones two.

Syn. C. deperdita. *Park. Org. rem.* 3. 189. *t.* 13. *f.* 5.

The only difference between this and the last is the angular form of the anterior side, and the greater width.

I have many specimens of this, both from Charlton and Plumstead; it has also been found at New-cross, near Deptford. All the specimens agree precisely with Parkinson's figure, above quoted.

CYCLAS obovata.

TAB. CLXII.—*Fig.* 4, 5, *and* 6.

Spec Char. Obovate, gibbous, anterior side obtuse; beaks large; central hinge teeth three; lateral ones two.

The equality of the length and breadth distinguish this shell: the lines of growth are rather strong, but irregular; it rarely exceeds three quarters of an inch in length.

The Clay of Barton Cliff is plentifully supplied with this Cyclas: I have received it from thence by favour of the Rev. W. Bingley, Iremonger, &c. and I have found a variety, exhibited in the larger figure, at New-cross.

AURICULA. *Lam.*

GEN. CHAR. An univalve ovate or oblong pyramidal shell with an elevated spire; aperture oblong, entire, contracted above with united lips; columella plaited, independently of the decurrent attachment* of the outer lip.

IN general, shells that have plaited columellæ have also beaked, or at least notched, apertures. The Genus Auricula has been established to receive such as form an exception to this rule, and are not turreted, having entire mouths and plaits on their columellæ; Bruguiere had separated them from the Volutæ of Linn. together with others that had no plaits, and formed the Genus Bulimus from which Lamarck has judiciously separated them. The spire seldom equals in length the last volution; Lamarck observes, that the species are mostly inhabitants of rivers; they are often decorated with various colours, are polished and transversely striated.

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* In the Genus Lymnæa a plait is formed on the columella by this part of the outer lip.

AURICULA incrassata.

TAB. CLXIII.—*Fig.* 1, 2, *and* 3.

Spec. Char. Ovate, ventricose, transversely sulcated, longitudinally striated; spire short; mouth angular above, with very thick lips; columella three plaited.

Syn. A. ringens. *Parkinson* iii. 84. *p.* 5. *f.* 4. *but not of Lamarck.*

When full grown this is about half an inch long, and two-thirds as wide; the outer lip is then much thickened for a considerable way back upon the last whorl, and this thickened part is marked by numerous lines of growth in place of the regular sulci; while the shell is young the lip is only slightly reflected at the edge. The longitudinal striæ only appear within the furrows, where they are elevated and sharp, dividing them into minute oblong rectangular cells, see fig. 3.

Miss E. Hill having presented me with both young and old shells of this species from Blackdown, and Mr. De France having also forwarded to me a valuable collection of shells from the neighbourhood of Paris, containing Lamarck's A. ringens, I am enabled to point out the incorrectness of Parkinson's reference; independently of the general form and difference of size; the want of striæ within the outer lip, and the presence of longitudinal striæ upon the surface distinguish the British shell.

AURICULA turgida.

TAB. CLXIII.—*Fig.* 4.

Spec. Char. Ovate-acute, turgid, transversely striated, shining; spire short, acute; aperture oblong, with thickened lips; columella two plaited; outer lip smooth within, thickest in the middle.

A minute glossy shell, rather more than a line long, varying in the thickness of its lips with its age. The spire is not quite so long as the mouth, which is con-

tracted in the middle by the thickened lip and the plaits upon the columella: the striæ are at a small distance from each other, and hollow without interruption.

So great is the resemblance of this to Lamarck's A. ringens that had he not mentioned the striæ within the lip, I might have overlooked the distinguishing character, although the French shell is double the size—a minute comparison also shews that A. ringens has rather a longer and more acute spire. A. turgida is the produce of the blue Clay of Highgate in which it sometimes adheres to the masses of indurated marl, &c.

AURICULA simulata.

TAB. CLXIII.—*Figs.* 5 *to* 8.

Spec. Char. Oval, pointed, with close transverse laterally toothed costæ; whorls slightly ventricose; mouth angular above; outer lip sharp, striated within; two broad plaits upon the columella.

Syn. Bulla simulata. *Brander* 61.

Nearly three-fourths of an inch long. There is a sinus in the lower part of the outer lip before it reaches the columella: the two plaits upon the columella are very prominent and laterally compressed; they are more or less oblique in different individuals. The costæ are small, flattish, and almost close to each other: the teeth upon the sides are minute, those in one rib being placed opposite those in the next form a series of elongated ovate hollows, as is represented at fig. 5.

Several of my friends have presented me with this from Barton Cliff. I possess also various specimens from Highgate; in one of these the outer lip is thickened and crenulated within, but as the shell had been broken just at the part, and has grown again, that may have arisen from the accident. Brander certainly meant the same shell, but his figure is too long: the name he has given it implies its resemblance in form to some species of Buccinum.

AMMONITES fimbriatus.

TAB. CLXIV.

Spec. Char. Discoid; volutions cylindrical, internal ones exposed; lines of growth undulated, and in some parts fimbriated; mouth orbicular.

It should appear from what remains in the specimen figured, that the mouth in a full grown shell, is furnished with an undulated reflected lip or ruffle, and the more or less perfect formation of this at various periods, produces either undulating lines of growth, some of which are obtuse and others acute, or thin annular fimbriæ, surrounding the volutions at certain intervals: the obtuse lines of growth are indented at their backs, but straight towards the mouth, and indicate that the undulation of the lip is strongest at the back of it. The whorls do not appear to have been very numerous; the shell is thin, and the margins of the septa have rounded lobes.

I could not refrain from publishing this curious Ammonite, although the fragment, for the loan of which I am indebted to the Rev. W. Buckland, is apparently so imperfect; however, it exhibits every essential character: it is from the Blue Lyas, at Lyme Regis, Dorsetshire.

AMMONITES vertebralis.

TAB. CLXV.

Spec. Char. Discoid, radiated, and carinated; inner volutions partly concealed; radii prominent, numerous, tuberculated in the middle, then furcate, with a tubercle upon each branch; carina serrato-tuberculate; aperture orbicular.

A very handsome shell whose radii are a little undulated, and together with the tubercles upon them, are sharpish and compressed; they are very regularly furcate, and each branch has a tubercle about its middle, then passes on in an elegant curve to the carina, where it forms another somewhat reflected tubercle—the two branches again unite on the other side. The thickness is about equal to one-third of the diameter.

The Rev. W. Buckland has enabled me to exhibit this with his usual fondness for science; he informs me that it is found at Dry Sandford and Marcham, two adjoining villages on the N. W. of Abingdon, Berkshire, where it lies in silicious sandy beds, that contain subordinate Strata of a gritty Limestone, composed of small Quartz pebbles, sand, and shelly fragments, united by a calcareous cement.

I have not seen the outside of the shell, but from the space between the whorls in the cast, I suppose it must have been thick. It is named vertebralis from the resemblance of the carina to the vertebral processes in some quadrupeds.

AMMONITES plicatilis.

TAB. CLXVI.

SPEC. CHAR. Discoid, radiated; sides flat; front round, plain in the centre; volutions exposed; radii numerous, equal, straight, furcate; aperture squarish, with rounded angles.

THE radii on this Ammonite, from their straightness, closeness, and regularity, have much the appearance of artificial plaiting or crimping; they do not branch until they begin to turn over the front, in the centre of which they are nearly obliterated; they are sometimes simple and less frequently trifid. The septa are acutely sinuated. The thickness is about one-fourth the diameter: the aperture is somewhat longer than wide.

A sandy Stratum, containing beds of sandy Limestone, at Dry Sandford and Marcham, N. W. of Abingdon, produces this shell; I am indebted for the use of the specimen figured, to the Rev. William Buckland. Several other Ammonites occur in the same Stratum, among them is A. concavus of tab. 105*: most of them have lost the shell; the present is only a cast of the inside, it has a few crystals of Carbonate of Lime about it.

* The inside casts of this are so well preserved, with regard to the sinuosities, that I was almost induced to add a fresh figure of it from some elegant specimens lent me by the Rev. W. Buckland.

AMMONITES obtusus.

TAB. CLXVII.

Spec. Char. Discoid, radiated; inner whorls exposed; front with two slight furrows and an obtuse keel; radii large, curved, sharpest in the middle; aperture oblong.

The large undulations or radii are equal in number to the septa, each crossing the inner lobes of one septum; they are very prominent in the middle, but are lost after winding towards the front: the keel is rounded, not much elevated, and the hollows on the sides of it are very trifling. There are about four whorls; the aperture is longer than wide, equalling one-third the diameter of the shell. I have some suspicion that the external surface of the shell is concentrically striated, but the specimens I have seen have only a small portion of it remaining.

I am indebted to the kindness of Miss Philpot, of Linley, for the use of the larger specimen, which, from the high polish and rich colour of the crystallized Carbonate of Iron that has lined its chambers, is truly beautiful. The one I have taken my section from was sent me by my friend —— Strangeways, Esq. They are both from Lyme, in Dorsetshire.

HAMITES armatus.

TAB. CLXVIII.

Spec. Char. Flatted; undulations simple, every second or third armed with a large thick spine on each side near the front.

Besides the two spines upon every third undulation, there are two obscure tubercles near the back upon the same ring, the intermediate undulations are less risen, and are almost lost upon the back; the section is elliptical.

This large and remarkable Hamite was found in Chalk Marl at Roak village, near Benson, Oxfordshire, and sent me for publication by the Rev. William Buckland. It is extraordinary, more from the spines or thorns it is beset with than from its size, although this much exceeds that usually attained by species of the same Genus in England. The spines are three-eighths of an inch long, being one-third the length of the section at the largest end of the shell. The specimen is a cast stained with iron, it has not preserved any indications of the septa.

The specimens next in size at present known, are found in the Chalk marl of Sussex, but still more mutilated: we hope to give good specimens ere long. It would be an acquisition to find one perfect at the ends—such not having been seen.

LYMNÆA.

GEN. CHAR. An oblong subturreted univalve; the aperture entire, longer than wide; lower part of the right lip entering the aperture, and forming a very oblique plait along it.

THE Helix stagnalis of Linneus, is Lamarck's type of this Genus, and upon a comparison of this with the Helix pomatia, the propriety of their separation is immediately visible. The Lymnea is an elongated pointed shell; in general it is smooth, tender, and has to boast of very little variety of colour: the recent species are known inhabitants of fresh water pools or rivers, and the few fossil ones hitherto met with belong, exclusively, to the newest depositions.

The thinness and semi-transparency or horny aspect of the shells of this, and many other fresh water Genera, is a great help towards distinguishing the fresh water formations from those of the salt water.

LYMNÆA fusiformis.

TAB. CLXIX.—*Fig. 2 and 3.*

SPEC. CHAR. Subfusiform, smooth; sides of the spire nearly straight; aperture narrow, half the length of the shell.

THE narrowness of the mouth of this makes the two ends almost equally taper; the spire is pointed; the striæ of growth are tolerably sharp, between them the surface is

 1817. pl. XXX

smooth and shining, without any transverse striæ, such as are upon Lymnæa stagnalis. It differs from Lamarck's Lymnæus longiscatus, and I believe from all other species in the flatness of its whorls, or rather the straightness of the sides of its spire; it is also shorter than L. longiscatus.

This shell is the produce of one of the fresh water depositions on the Isle of Wight; it was collected by the Rev. Mr. Iremonger, and sent me along with Planorbis euomphalus, tab. 140.

LYMNÆA minima.

TAB. CLXIX.—*Fig.* 1.

Spec. Char. Elongated, smooth; volutions rather convex; aperture less than half the length of the shell, ovate; last whorl not ventricose.

A small shell, only three or four lines long, nearly related to L. longiscatus but shorter.

It is probable that this may be the young of some other species; it occurs with a minute Patella along with the shell above described.

HELIX globosus.

TAB. CLXX.

Spec. Char. Globose, slightly elongated, obscurely transversely striated; whorls but gradually increasing in size; outer lip reflected.

From the gradual increase in size of the whorls, the last of which is not remarkably larger than the preceding, joined to the slight convexity of their exposed parts, the shell assumes a globose aspect although it is not strictly spherical. The young ones are rather depressed, and have an umbilicus; the old ones are slightly elongated, and have the umbilicus concealed by the expansion of the inner lip. The lines of growth are distinctly marked: the transverse striæ irregular, numerous, hollow, and so superficial, that they are only to be seen in the best preserved specimens.

Specimens of this shell were presented to me by John Holloway, Esq. who found them at Shalcombe, on the Isle of Wight, where it is of rare occurrence. From its exact resemblance in generic characters to the Helix pomatia, it must be considered like it, to be a land snail, and should seem to have been accidentally imbedded with the water shells in the calcareous (now stoney accumulation) that has preserved them, and often filled their interiors: the shell has been replaced by crystallized Carbonate of Lime. I have been favoured with specimens of the Genus Phasianella in the same state of preservation, from the same rock. The rock is a compact Limestone, breaking with a smooth conchoidal fracture, and contains but a few fragments of shells; it is much harder than chalk, or even Portland stone, but softer than the Purbeck stone or mountain Limestone.

HELIX? striatus.

TAB. CLXXI.—*Fig.* 1.

SPEC. CHAR. Conical, depressed, subcarinated, obliquely striated, a rising band around the edge, crossed by arched striæ; columella solid, aperture subtriangular.

THERE is a great resemblance about the base of this shell to the genus Trochus, given it by the prominent columella; in other respects it strongly resembles Helix carinatus, (see tab. 10.*) from which it differs in not having an umbilicus, in the greater distance and sharpness of its striæ, and the strong arched striæ upon the band.

From the Limestone of Derbyshire, collected by Martin; the place of the shell is occupied by granular Carbonate of Lime, and the inside filled with grey Limestone. Had not the general form strongly resembled the Helix above mentioned, I might have been induced to have placed this as a Trochus, although it does not precisely accord with the characters of that genus. I might have formed a new genus of the two, to which the following species should have been added, did they not differ materially from each other in the characters that should distinguish it. Besides the aperture is very imperfect in them all. It is probable that other species may be found, and that by their help and that of more perfect specimens, the genera they belong to may be determined, or the characters of new ones ascertained, and this is the more desirable as they appear from their localities to be marine inhabitants, rather than land shells.

* In the description of this the striæ are said to be transverse instead of oblique by mistake, and the striæ upon the lower part have escaped notice.

HELIX? Cirriformis.

TAB. CLXXI.—*Fig.* 2.

SPEC. CHAR. Conical, acute, umbilicate, decussato-striated; with a band around the middle of the whorl crossed with arched striæ; aperture nearly round.

A SMALL space upon the upper part of each whorl is flattened, the remainder is very round, bearing upon the middle of it a broad band, strongly marked with lunate striæ; the decussating striæ upon the other parts are small, and most distinct above the band. The rounded volutions which touch each other only in a small part of their surface, the aperture being nearly round, and rather wider than long, together with the conical form of the spire, give this a great resemblance to Cirrus acutus, tab. 141; but the umbilicus does not appear large enough to authorize our placing it under the same Genus; I therefore leave it for the present along with a shell to which it has as great an affinity.

I received this along with the last from Mr. Martin; it is from the same Limestone; there is within it part of an Encrinus.

AMMONITES Henleyi.

TAB. CLXXII.

SPEC. CHAR. Discoid, gibbose, with many small radii; inner volutions exposed; radii flatted, with two compressed tubercles upon each; aperture large, nearly round.

BETWEEN the two concentric rows of tubercles the shell is slightly flatted, otherwise the form of the mouth would be round, with a small sinus produced by the preceding whorl. The whorls are few, and increase rapidly in thickness as they proceed towards the mouth. The numerous radiating ridges are compressed, so as to be as wide as the spaces between them, and at the insertion of the outer tubercle are commonly split into two, that unite on the opposite side: a few of the radii proceed from the centre over the front without tubercles.

Lyme Regis, in Dorsetshire, is a place that has produced many fine petrifactions peculiar to the blue Lyas; the present is among the number that have fallen into the deserving hands of the Rev. Mr. Buckland. It was found upon an estate belonging to H. H. Henley, Esq. of Sandringham, near Lynn; in kind remembrance of whom it has been named by Mr. Buckland. Its external surface, concamerations, and siphuncle, have not been preserved; the specimen is only a cast in Lyas, with some crystallized Iron Pyrites in two or three parts.

AMMONITES rostratus.

TAB. CLXXIII.

Spec. Char. Depressed, carinated, tuberculated; tubercles three or four upon each radius, largest towards the front; volutions exposed; aperture elliptical, with a compressed reflected beak.

The aperture, exclusive of the beak, is somewhat less than a third of the diameter of the shell long; the beak is a little reflected and flattened, the edges of it so pressed together, as nearly to close it: the tubercles are more divided upon the inner whorls than upon the outer ones, where they begin to run into one another, and form ridges that are curved forwards, towards a prominent insulated keel: volutions about four.

So remarkable is the beaked mouth of this Ammonite, that I have named it from that character. The figure is taken from a specimen lent me with a valuable collection of the same Genus by the Rev. Mr. Buckland; it was found in Chalk Marl at Roak Village, near Benson, Oxfordshire. The terminal chamber or that in which the animal is supposed to have resided, being preserved entire, renders the specimen particularly valuable, as it is commonly broken off.

1817. f. XXX

CHAMA digitata.

TAB. CLXXIV.

SPEC. CHAR. Palmate, slightly recurved, gibbose, with five or six marginal elongated canaliculated processes; surface smooth.

THIS is an oblique elongated curved shell, with several ridges upon the deeper valve, that are drawn out at the margin into finger-like processes, which are concave beneath, and some of them slightly expanded towards their ends. The attached valve is unknown.

We are to thank the zeal of our friend, the Rev. Mr. Buckland, for communicating this curious species: casts of it very neatly formed, are contained in masses of porous flinty Chert; the space formerly occupied is sometimes partially filled with brown Oxide of Iron or Calcedony. The casts of the inside are often hollow, and lined with quartz crystals.

The texture of the stone, and partial union of the two sides of the casts to each other, have rendered it impossible to expose the whole outline of the shell. I have given figures of four specimens that illustrate each other; the two upper ones exhibit the claws (if I may so call the marginal processes); one of them (fig 1.) is a cast of the external surface: the other (fig. 2.) (which has been accidentally reversed by the engraver) shews a greater elongation of the processes, and a hollow with quartz crystals; the lower figures are from two varieties, a broad shallow one and a narrow very deep one;* the claws of these have been completely entangled in the

* Such varieties often occur in shells of this Genus, as well as among oysters.

stone, but they display enough of the hinge to prove that it has one elongated irregular tooth : one of them (fig. 3.) shews the concentric lines of a single muscular impression very neatly ; but I am unable to trace indications of two upon either of them to make their generic character complete. Three of the specimens have considerable portions of stone attached to them ; as they would render the shells less conspicuous I have omitted them in the figures, which, even now, are not so perfect as might have been desired ; but experience teaches us that we must depend much upon such specimens for our knowledge in geology, and rest satisfied when they are perfect enough for us to trace the identity of species.

Long Comb Girts, in the parish of Sudbury, near Sidmouth, where these specimens were found, is the only spot, I am informed of, that produces this species.

The attached valves have not been met with ; they have probably been left adhering to the rocks from which the others were washed, previously to their being deposited in the situation we now find them preserved in.

PHASIANELLA. *Lamarck*, Phasianus, *Montfort.*

GEN. CHAR. An oblong subturreted pointed univalve; aperture entire, longer than wide; left lip sharp; right lip reflect d over the last whorl; a longitudinal ridge upon the columella.

A GENUS instituted by Lamarck; it is distinguished from his Lymnæa by the thick edge of the right lip not entering the mouth, but reposing upon the body of the shell. In general, also, the whorls are more equal than in that Genus, and the shell is thicker, opaque, and variegated.

The recent species inhabit the shores of islands in the neighbourhood of New Holland.

PHASIANELLA orbicularis.

TAB. CLXXV.—*Fig.* 1.

SPEC. CHAR. Conical, acute, smooth; whorls about six, ventricose; aperture nearly round.

THIS is nearly related to the Genus Vivipara, but the spire is too much elevated and too acute; it is marked with lines of growth, and the smaller whorls have a few obscure transverse lines upon them. There is apparently an open umbilicus; but if the shell were full grown or perfect, it would probably be covered, as it is, but narrow.

I have referred to this species of Phasianella in the description of Helix globosus, tab. 170, along with which

it occurs in Limestone, at Shalcomb, on the Isle of Wight. I am also indebted to the liberality of the same friend to science John Holloway, Esq. for the specimens.

PHASIANELLA angulosa.

TAB. CLXXV.—*Fig.* 2.

Spec. Char. Conical, smooth; whorls subcarinated; aperture nearly round.

This differs from the last only in the angular form of the lower part of each whorl, which makes the sides of the spire straighter.

From Shalcomb, along with the last.

PHASIANELLA minuta.

TAB. CLXXV.—*Fig.* 3.

Spec. Char. Elongated, smooth; volutions five or six, obscurely squared; aperture oblong.

Scarcely two lines long; the flatness of the upper parts of the whorls, which separates them from each other, is not easily overlooked.

From the Isle of Wight. The figure on the left is a magnified representation.

AMMONITES varians.

TAB. CLXXVI.

Spec. Char. Depressed, thickish, carinated, with a row of large tubercles near the front, and one or two rows of tubercles placed upon furcate radiating undulations; inner whorls half concealed; aperture roundish.

No Ammonite is more variable than this in the strength of the undulation, and proportion of the tubercles; still, however, it may be known by the large turbercles near the front (these are sometimes flatted obliquely) and two lesser ones upon each radius near the commencement of it, the inner of which is generally smallest, and at times even obscure, or united to the other. The whorls are seldom more than three: the keel is much relieved, and entire. The length and breadth of the aperture are about equal to each other, and one-third the diameter of the shell.

So frequently are the casts of this handsome shell distorted, as if by the compression of the chalk, while in a soft state, of which they are composed, that specimens have often been exhibited in proof of the existence of elliptical Ammonites; but a series may easily be obtained, some individuals of which are circular; others compressed obliquely, and in such various directions, as to evince the effect of accident. The lower or hard chalk is well characterized by this fossil, as it contains it in

abundance. Some of the specimens figured are from Wiltshire, others from Sussex. I am indebted to many friends for varieties from the former county: G. A. Mantell, Esq. has kindly communicated a good suite from Hamsey, Plumpton, and other parts of the south of Sussex.

AMMONITES inflatus.

TAB. CLXXVIII.

Spec. Char. Depressed, radiated, carinated; sides and front flattish; inner whorls exposed; the latter whorl inflated near the aperture; radii commencing with a tubercle, then furcated; keel distinct, entire; aperture square.

Whether this is a distorted cast may remain a question, as it does not appear to be fractured in any part; its elliptical form leads to suspicion. The sudden increase of the last volution near the end, and subsequent contraction, is a curious circumstance, if it be constant, and it can hardly be the effect of pressure in any direction. The undulations or rather radii are large, commencing with a compressed tubercle, then furcate, one of the branches being sometimes divided from the other, ending in elongated compressed knobs upon the front.

A cast in the green sand of the under cliff in the Isle of Wight, lent me by the Rev. William Buckland; the lower figure is a fore-shortened view of the same specimen.

1817. + 9 / 16 XXX /.

AMMONITES rusticus.

TAB. CLXXVII.

Spec. Char. Depressed; whorls few, gibbose, exposed; with 6 or 8 conical tubercles upon the sides of each, and two rows of obtuse tubercles around the front; aperture wider than long.

Whorls about three: the bases of the larger tubercles almost touch each other, and they expand nearly across the whorl; the front of the whorl is very broad and flattish; the tubercles upon it are numerous, and but little elevated. Aperture quadrangular: the inner side concave, and much shorter than the others.

A heavy clumsy shell, well characterized by its few large knobs, and broad front: it is a rare production of the lower chalk, at Comb Pyne, near Lyme, in Dorsetshire, and was lent me by the Rev. William Buckland.

ASTARTE plana.

TAB. CLXXIX.—*Fig.* 2.

Spec. Char. Nearly orbicular, depressed; surface plain; lunette elongated, acute, deep; margin entire.

Very analagous in general form to A. Scotica; and when the softer parts between the lamina have been corroded, the surface presents numerous concentric ridges; otherwise, it is only marked with fine lines of growth. The shell is thick, equilateral, with a pointed beak, and entire margin; its length does not always bear the same proportion to the width, sometimes being equal to it, but oftener less.

Occurs in a sandy alluvial stratum, at Bramerton, near Norwich, where I collected specimens in August, 1817.

ASTARTE obliquata.

TAB. CLXXIX.—*Fig.* 3.

Spec. Char. Obovate, transverse depressed; with many oblique concentric striæ upon the surface; margin crenulated.

The numerous regular impressed striæ which cross the few lines, or rather waves of growth at a very acute angle, give rise to the name of this elegant shell; its width is greater than its length; it is somewhat depressed and slenderer than most of the Genus: the spaces between the striæ are rounded and smooth.

My active correspondent, Mrs. Cobbold, discovered this shell in the Crag pits at Holywells, near Ipswich, and indulged me with specimens in 1812: they are in a good state of preservation.

ASTARTE lineata.

TAB. CLXXIX.—*Fig.* 1.

SPEC. CHAR. Obovate, transvere, depressed, slightly truncated; with a few concentric acute ridges, and many minute intervening striæ upon the surface; lunette lanceolate, small; margin entire.

ALMOST lenticular; the anterior side is smallest and truncated: the slope upon which the cartilage lies is long and straight; the shell is thin, about an inch wide, and has nearly thirty prominent sharp lines or ridges.

It is with some hesitation that I give this as an Astarte, not having seen the hinge teeth it is probable that it will prove to be a Lucina. The only specimen known is filled with granular iron pyrites, and so liable to decompose, that I would not risk losing the opportunity of figuring it granted me by the Rev. Mr. Buckland: it was found in the selenite bed, in the Heddington Clay, near Oxford.

TELLINA obtusa.

TAB. CLXXIX.—*Fig.* 4.

SPEC. CHAR. Transversely ovate, convex, concentrically striated; margin obtuse; sides very unequal.

THE wave upon the anterior side that distinguishes the Genus Tellina, is very slight in this. The surface is most rapidly curved near the edge, which being obtusely oval, the whole has a blunt clumsy appearance; the striæ are concave, wide, and numerous. The anterior side is much the smallest. Young shells are flatter and less rounded towards the margin.

My friend, the Rev. P. Lathbury, first sent me this species of Tellina, from the Crag near Woodbridge, about twenty years ago: I have since received it from Roydon, by favour of the Rev. G. R. Leathes, and have found it at Bramerton in abundance.

NUCULA. *Lamarck.*

Gen. Char. An equivalved inequilateral bivalve; hinge with two interlocking rows of small teeth in each valve, diverging from a space within the beaks; beaks conniving, turned back.

Linneus's Arca nucleus is the type of this Genus, which is well distinguished from other Arcæ by the disposition of the small interlocking teeth; several of the species have a concave space or tooth between the two rows of teeth, but as it is not constant to all the species naturally allied to the Genus Lamarck has omitted it in the generic character given in his Mémoire sur les fossiles des environs de Paris.

NUCULA Cobboldiæ.

TAB. CLXXX.—*Fig.* 2.

Spec. Char. Transverely obovate, convex; surface marked with zigzag furrows, diverging over the sides; edge entire.

The posterior side is very short; the space between the rows of teeth is elongated, and very concave; the inner surface is decorated with a coat of pearl; the outer surface is ornamented with numerous slight furrows, which are zigzag over the middle, and thence diverge on each side towards the front: it varies in gibbosity.

I have met with three varieties of this; the first a small gibbose one, was sent me from Holywells, by Mrs. Cobbold; a second, almost orbicular, was lent me by the

Rev. G. R. Leathes, who obtained it at Roydon; the third, and most regular one, I picked up at Bramerton, it is the one figured, and is very tender.

Being desirous of commemorating Mrs. Cobbold, whose copious collection obtained with great industry, in company with several of the junior branches of her family, whom she delighted to inspire with a love for the works of Nature, from the Crag pits of her own estate, evinces a degree of taste and zeal seldom met with; I have named this rare, and withal elegant shell after her.

NUCULA lanceolata.

TAB. CLXXX.—*Fig.* 1.

Spec. Char. Transversely ovato-lanceolate, smooth; posterior side pointed, edge entire; a concave deltoid space in the hinge.

Sides nearly equal, the anterior being rather the largest is most rounded; the shell is strong, and of almost equal thickness throughout, the beaks projecting but slightly: length half the width.

This curious Nucula was discovered by the Rev. G. R. Leathes, at Bawdsey, Suffolk, in Crag; the line of the hinge is broken, but not much bent; nevertheless it has the genuine characters of Nucula. It appears to be very rare.

TROCHUS lævigatus.

TAB. CLXXXI.---*Fig.* 2.

Spec. Char. Conical, nearly smooth; sides straight; base convex, with an obtuse margin; aperture rhomboidal, with rounded angles.

Height and width nearly equal; the sides of the cone are almost straight, each whorl being very slightly convex: a few concave lines may be traced around the spire, they are obscure and irregular; the lines of growth are very fine, and thus the surface appears smooth. The base of the columella is oblique, which gives the mouth a rhomboidal form, there is no umbilicus.

This interesting Trochus nearly resembles T. ziziphinus, but is readily distinguished by its obtuse margin and plain surface. The specimen figured was presented me by Mrs. Cobbold, who found it in the Craig pits at Holywells: the external coat has peeled off in some parts, and exposes the pearly interior, whose pristine beauty may still be traced through the veil that time has cast over it in its subterranean cemetery.

TROCHUS similis.

TAB. CLXXXI.---*Fig.* 2.

Spec. Char. Conical; sides straight, ornamented with many transverse ridges, two or three of which upon each whorl are granulated; base flattish, concentrically striated; aperture quadrangular; columella direct.

The older shells of this species are rather wider than high; the superior whorls overhang the inferior ones a

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little, else the sides of the cone would be very straight: the ridges vary in size; the largest are towards the lower part of each whorl, with minute intervening ones; the granulated ridges have small plain ones between them.

Specimens from the Holywells estate, from two to six lines high: it does not appear to be rare. It bears a general resemblance to several species.

TROCHUS concavus.

TAB. CLXXXI.---*Fig.* 3.

Spec. Char. Conical; sides of the whorls concave; base flattish; margin carinated; aperture acutely rhomboidal; umbilicus none.

A few obscure transverse striæ decorate the spire; in the concave part of each whorl is an indistinct row of tubercles; the base is smooth, a little broader than the height of the spire.

The Rev. H. Steinhaur found this shell in the inferior Oolite at Little Sodbury. It is distinguished from the next with which it agrees in general form, by the transverse striæ, single carina, and solid columella.

TROCHUS duplicatus.

TAB. CLXXXI.---*Fig.* 5.

SPEC. CHAR. Conical; sides of the whorls concave; a double deeply crenulated carina round the base; umbilicus open, with a tuberculated margin; aperture quadrangular.

THE upper edge of each whorl is crenulated as well as the carinæ: the concave space between the two edges is plain; the whole surface is shining. The umbilicus, which has about seven tubercles around it, forms a strong and remarkable character.

From Little Sodbury, along with the last.

TROCHUS dimidiatus.

TAB. CLXXXI.---*Fig.* 4.

SPEC. CHAR. Conical; base convex, with a carinated margin; upper part of the whorl concave, with an entire carina in the middle; aperture pentangular.

THE smaller whorls are convex; the last formed ones only shew the carinæ and concave spaces between them: the carina in the middle of the upper part of the whorl projects so much as to give the shell a square clumsy form: the columella is direct and solid.

I have received a single example of this from Little Sodbury, along with the two latter species: it is dull and rather rough on the surface.

NAUTILUS striatus.

TAB. CLXXXII.

Spec. Char. Slightly depressed; umbilicate; concentrically striated; aperture half the diameter of the shell, nearly orbicular.

Whorls rather gibbose, they are few, and increase rapidly; the umbilicus is large, exposing a small part of the inner whorls; the numerous striæ which cover the surface are irregular, elevated, and so strong, that they might almost be considered as ridges; the front is a little compressed, giving the aperture a squarish form.

Found in the blue Lyas at Lyme Regis, Dorset. The large fragment was lent me by the Rev. W. Buckland.

AMMONITES Loscombi.

TAB. CLXXXIII.

Spec. Char. Discoid, compressed, umbilicated; inner whorls concealed; radii many, shallow, waved; front rounded; aperture oblong.

The surface is smooth; the umbilicus small, and not very deep; the aperture is about two-fifths the diameter of the shell long, the thickness being only one-third the length of the aperture.

I was favoured with the loan of the shell here figured, by C. W. Loscombe, Esq. who obtained it from the blue Lyas of Lyme in Dorsetshire. It is in a good state of preservation, but the mouth had been broken in a way that led some genius to clear the stone from it, so as to give the appearance of a beaked termination to it: tab. 173, A. rostratus, shews a proper termination. I have thought fit to figure the present as a caution against deception.

AMMONITES Braikenridgii.

TAB. CLXXXIV.

Spec. Char. Depressed; radiated; volutions exposed; front rounded; crossed by the radii; radii furcate; mouth round; lip expanded into two oblong lobes.

Radii prominent, numerous, rather sharp, and equal to the spaces between them: there is a small tubercle upon each at the base of the branches; the thickness of the last whorl is rather less than one-third the diameter of the shell: there are about three or four volutions. The lip is very striking, it commences with a square base, and having been continued a little way from the last radius it suddenly expands on the sides into two oblong lobes, on which are distinctly marked the lines of growth: the edges are sharp, and gradually bent a little inwards.

Perfect terminations of the Ammonites are rare; I have however, met with several specimens indicating the form of the lip, but none of them exhibit any thing much out of the usual way, excepting some French ones, and those now before us: in one of the French specimens the aperture is much contracted by the lip; in another, the lip forms a single arched lobe slightly bent inwards.*

These remarkable fossils are from Dundry near Bristol: they are composed of foliated carbonate of lime, and are imbedded in a compact limestone, replete with rounded shining grains of yellowish brown oxide of iron, and the remains of various other shells. They enrich the collection of George Weare Braikenridge, Esq. of Bristol.

* Of these I have made an engraving for comparison; they are found in a similar stone with the British one, at Bayeux in Normandy, and were presented to me by Mons. de Gerville, to whom I am much indebted for the fossil produce of the Cotentin.

AMMONITES constrictus.

TAB. A.---*Fig.* 1.

SPEC. CHAR. Depressed, radiated, armed with a row of acute tubercles on each side the front; inner volutions concealed; radii undulated, of various lengths; aperture even, oblong, contracted by a blunt-edged inflected lip.

IN some varieties there are a few tubercles near the centre, the same have also larger tubercles near the front: the tubercles are always largest about the middle of the last whorl, and gradually diminish towards the mouth and the inner turns, where they are entirely wanting; on the contrary, the radii are most conspicuous on the inner whorls. There is a minute, apparently open, umbilicus. The mouth which is placed at an acute angle to the radii, is reduced to an oval form by an inflexion of the edge, and is so much contracted that the shape of its opening is not affected by the preceding whorl; the edge of it is so bent that the closed part is placed nearly at a right angle to the remainder. The septa, the last of which lies about half a turn from the mouth, are much sinuated, and numerous.

Casts only of this shell have as yet occurred, but they are so perfect, that they exhibit every thing that can be expected. The termination of the last chamber is a very striking feature; it is met with in almost all the specimens. From St. Colombe, in Normandy.

AMMONITES Gervillii.

TAB. A.---*Fig.* 3.

SPEC. CHAR. Gibbose, umbilicate, radiated; a small portion of the inner whorls exposed; radii sharp, bent, furcate; aperture transverse, oblong, arched; lip arched, sharp edged.

THE thickness of this is rather more than half the diameter: the umbilicus is large, beautifully exposing the

ribbed edges of the whorls: the radii are nearly close together, and very regular until just before the last whorl is completed, when their place is supplied by two or three irregular waves; the shell is then finished with a sharp edge.

This species occurs in a marly Limestone, which is replete with grains of Iron Ochre: the place of the shell is supplied by foliated carbonate of Lime. It is from Bayeux, in Normandy.

AMMONITES Brongniarti.

TAB. A.---*Fig.* 2.

SPEC. CHAR. Gibbose; radiated; umbilicate; inner whorls concealed; umbilicus minute; aperture transverse, oblong, arched, with a thick or inflected lip; radii furcate, bent.

THICKNESS about two-thirds the diameter: the radii are close, waved, and very regular: the umbilicus is minute, round within, but oblong externally, in consequence of the last whorl being carried forward in a straight line for a short distance, after which it turns suddenly towards the mouth.

This is found in the same state of preservation in the same stratum with fig. 3; and it may be worthy of observation, that the Rev. Mr. Buckland possesses in his cabinet, a specimen from Yeovil of the same species with this, but in a stone very sparingly furnished with the ferruginous grains, and such as there are being in a decomposed state.

I have named these two last shells, the one as a testimony of respect to an enlightened and warm friend of science in general, and of Natural History in particular, Mons. de Gerville, who has laboured with much assiduity in collecting and arranging the fossils of the Cotentin:---the other in honor of Brongniart; its rotundity may be considered as a type of the orb of knowledge spread abroad by that luminary, in conjunction with Cuviér, after whom I have already named the spreading Inoceramus, Cuvieri.

My kind friend M. de Gerville, above named, furnished me with all the three species figured on this plate.

UNIO crassiusculus.

TAB. CLXXXV.

Spec. Char. Oblong-elliptical, depressed; valves thick; surface marked by lines of growth; hinge strong.

The surface of this shell is regularly curved, without any hollow or rising: the beaks are sharp, a little recurved: the lines of growth are not very prominent, except two or three of them near the edge: the hinge is light and elegant in comparison to that of U. crassissimus, although thick.

I am indebted to the Rev. G. R. Leathes for the knowledge of this Unio: he has obtained it from the Craig at Bawdesey, in Suffolk.

The valves have been replaced by carbonate of lime of a crystalline texture, and are attached to masses of ochraceous limestone, or lie loose in the craig.

PECTEN orbicularis.

TAB. CLXXXVI.

Spec. Char. Orbicular, much depressed, concentrically striated; striæ elevated, sharp; one valve smooth; ears nearly equal, broadest at the base.

A thin tender shell; the striæ are many, a line distant from each other; the length and breadth are equal; the ears rather large.

One of the tender products of the green sand of the Devizes canal, preserved by Mrs. Gent. It appears to be unfrequent, as I have seen but one individual.

MUREX coniferus.

TAB. CLXXXVII.---*Fig.* 1.

Spec. Char. Elongated, with many longitudinal undulations, crossed by numerous unequal elevated striæ; volutions few, inversely conical, their upper parts depressed and nearly smooth; beak open, rather short; aperture ovate.

The general form of this Murex is that of a series of cones gradually diminishing in size, and so arranged, that the points of the smaller ones penetrate the bases of the larger: a few of the striæ upon the smaller whorls form carinæ, which are thicker where they cross the undulations or costæ, and give them a tuberculated appearance. The upper part of each whorl is distinguished by the want of transverse striæ. The aperture, including the beak, occupies half the length of the shell.

Highgate Hill afforded me this species, which I have not recognized elsewhere.

MUREX regularis.

TAB. CLXXXVII.---*Fig.* 2.

Spec. Char. Rather elongated, with many longitudinal undulations, crossed by strong elevated striæ; whorls convex, the last contracted towards the beak; beak open, rather slender, aperture obovate.

The volutions vary in number, from five to eight; they are very regularly convex; the ribs and striæ are also

pretty uniform: the beak has a slight bend: within the lip are a few small plaits, and the striæ of the surface are distinguishable upon the columella. The length of the mouth and beak together is half that of the whole shell.

This was sent me from Barton Cliff, by Miss Salisbury.

MUREX carinella.

TAB. CLXXXVII.---*Fig.* 3 *and* 4.

SPEC. CHAR. Rather elongated, with many longitudinal undulations, crossed by strong elevated unequal striæ; whorls convex, subcarinated in the middle, the last contracted towards the beak; beak open, rather slender; aperture obovate.

VERY similar to the last; its difference consists of the subcarinated form of the volutions, which is chiefly produced by the slight enlargement of one of the striæ.

This was favoured me along with the last: it bears some resemblance to the M. craticulatus of Brocchi's, tab. 7, f. 14; but the last whorl is not so ventricose, neither is the carina so strong.

CERITHIUM cornucopiæ.

TAB. CLXXXVIII.---*Figs.* 1, 3, *and* 4.

Spec. Char. Turrited, subulate, punctated; whorls very numerous, superior ones with 3 or 4 unequal tuberculated carinæ, central ones tuberculated above, undulated below, with 4 or 5 transverse furrows; lowest whorls crossed by 9 or 10 elongated tubercles; aperture quadrate; columella plaited; beak short, curved.

So different are the several parts of an entire adult shell of this Cerithium, that fragments may be taken for distinct species. The whorls close to the apex have only one carina placed a little below the middle, and crenulated: in the succeeding whorls the upper edge gradually becomes tuberculated, a small knotted keel rises between it and the central one, and the lower edge appears crenulated: by degrees the tubercles on the upper edge increase in size, the central carina becomes flatter, and other carinæ arise on each side of it: near the middle of the shell these carinæ all become broader, and the spaces between them assume the form of furrows; the tubercles and crenulations remain in the form of waves: in the mean while the tubercles upon the upper edge are elongated, and towards the interior part of the shell join the waves below them, displacing the furrows by degrees, till having receded from the edge in the three or four last turns, they occupy the whole whorl in the form of blunt, oblong, rather oblique knobs. The minute hollow punctums that are dispersed over the whole surface are disposed in lines that diverge as they rise over the tubercles, and converge again as they de-

scend, very elegantly. The aperture in half grown shells is quadrate; in full grown individuals the right lip is semicircular. The beak is a little twisted; the edge of it rises upon the columella like a plait; above this is an obtuse plait upon the columella; and a third plait, or rather ridge, sometimes occurs just above the columella. Its length often exceeds a foot; the diameter of the last whorl is one-fourth the length in general, but sometimes the shell is less taper. The whorls are above 30 in number.

The clay, mixed with green sand, exposed at low tides under Stubbington Cliff, has afforded fragments of this, the most ornamental fossil shell I know; but these are in a bad state of preservation, not only in consequence of their exposure to the ocean, but from having been much perforated by some worms, that have threatened the rapid destruction of their usurped habitation before it was consigned to the earth, to be preserved for ages yet to come. I am indebted to the kindness of Mr. Holloway for a specimen, which from its situation was difficult to be obtained: it is represented at fig. 1: perhaps, if the stratum could be explored before the sea had acted upon it, specimens might be procured in a high state of preservation. My good friend Mr. De Gerville has sent me from the Cotentin a good series of the same species, delicately preserved, but not perfect at either extremity; several of them are worm-eaten, like the Stubbington ones: fragments of the upper parts are shewn for illustration at figs. 3 and 4. As it is often filled with minute shells, Mr. De Gerville has been in the habit of calling it by a name analogous to cornucopiæ, a name I have thought sufficiently expressive of its magnitude or capaciousness to apply: it is also applicable to the giver's generosity, whose horn of plenty I hope to have the pleasure of emptying into the lap of science at no very remote period.

CERITHIUM giganteum.

TAB. CLXXXVIII.---*Fig.* 2.

Syn. C. giganteum. *Lamarck Env. de Paris, p.* 95. *Knorr, III. tab.* 107, *f.* 1. *Parkinson Org. Rem. III.* 71.

Spec. Char. Turrited, extremely long, transversely striated, minutely punctated; upper parts of the whorls tuberculato-nodose; columella uniplicated.

According to De Lametherie, 30 inches is a length sometimes attained by this gigantic shell, the diameter of the last turn being then $7\frac{1}{2}$ inches. Unlike the last, this Cerithium is nearly uniform throughout its length; it differs from every part of it in the position of the tubercles, which are confined to the upper parts of the whorls: below the tubercles are 6 or 7 transverse striæ at equal distances from each other; while in those whorls of the C. cornucopiæ which have striæ below the tubercles, they are but five, and at unequal distances. This is also more taper than C. cornucopiæ.

It was not until I had described the preceding, that I discovered, upon comparing two specimens sent me by Mr. Holloway, very carefully, with an authentic one of C. giganteum, given me by Mr. Parkinson, that Mr. Holloway's were distinct from each other; and that the smaller one, although much worn, still retained characters enough to prove it to be the giganteum. It is extraordinary, that two species, hitherto met with in different parts of France, should be found together on the English coast. The worms that have committed such ravages upon both species, have in the specimen before us been more limited in their operations, confining them to straight lines, that branch in a dichotomous manner.

MUREX fistulosus.

TAB. CLXXXIX.---*Fig.* 1 *and* 2.

Syn. M. fistulosus. *Brocchi, II.* 394 *tab.* 7, *f.* 12.
M. pungens. *Brander, f.* 82.

Spec. Char. Oblong, varicose; each varix foliated, and produced above in a recurved tube; aperture obovate, entire; beak nearly straight, closed.

By no means a handsome shell, although remarkable: the varices, or ribs, are thick and clumsy; each has a sinuated thin appendage at the back of it, and a large arched tube at the upper part: the aperture is perfectly entire, the lips being joined all round: outside the right lip are four or five sinuated fimbriæ, more or less distinct in different individuals: the beak is broad, and in old shells is often double or triple, the earlier formed ones remaining uncovered. The width of the shell in the middle is about half the length.

I have met with two specimens of this found in Barton Cliff; they were presented to me by Mr. Bullock: in one of them the fimbriæ near the aperture are very obscure: allowing that they may sometimes be entirely wanting, there would not remain a shadow of difference between these shells and Brocchi's figure: Brocchi observes, that his shell is variable. Brander's fig. 82, seems to have been intended for this also, although in Dr. Solander's description it is not distinguished from M. pungens, fig. 81.

MUREX tubifer.

TAB. CXXXIX.---*Figs.* 3 *to* 8.

Syn. Murex pungens. *Brander, p.* 35, *f.* 81.
Murex tubifer. *Lamarck Env. de Paris, p.* 54. *Park. Org. Rem. Vol. III. p.* 65. *t.* 5. *f.* 15.
Murex horridus. *Brocchi, II.* 405. *t.* 7. *f.* 17.

Spec. Char. Ovate ; with four rows of erect tubes alternating with four solitary tubes upon each whorl ; aperture obovate, entire ; beak arched, closed.

Volutions convex and smooth, each furnished with four or five longitudinal rows of tubular spines, generally three in a row ; between each row is a solitary erect slightly arched tube, placed upon the upper part of the whorl. The beak is rather pointed, closed at the front, but open at the end.

It is remarkable that Brocchi should have mentioned Lamarck's M. pungens as related to his M. fistulosus ; while he has described M. pungens under the new name of horridus, in nearly the same terms as those used by Lamarck, without referring to him. Brocchi seems to have had finer specimens than are found in Hampshire, although it is probable that they come from a distant part of the same stratum, and consequently may have been buried at nearly the same period : is it not likely that one part of a stratum may have been in a situation more congenial to the growth of the individuals it has enveloped than others ? The more perfect state of preservation in which many of the foreign fossils are now obtained, probably arises from the climate in which they are exposed : that of England, especially by the sea-side, being more calculated for the destruction than the preservation of tender calcareous reliques.

The specimens numbered 3, 4, and 5, are from Barton ; the two former through the kindness of Miss Salisbury ; the latter, which is a young one, before the beak is closed, was sent me by the Rev. Mr. Bingley.

Figs. 6, 7, and 8, are from young shells found at Highgate : although they are nearly as large as fig. 5, the rows of tubes are not formed, but the solitary tubes are commenced : in fig. 8, which is the smallest, there are several indications of the first tube upon the varices. Had a larger extent of ground been opened, it is possible we might have come to the bed where this species had attained its full growth.

AMMONITES Brooki.

TAB. CXC.

SPEC. CHAR. Depressed, carinated, with a sulcus on each side of the keel; radiated; radii strong, simple, arched; inner volutions exposed; aperture oblong.

A BOLDLY marked shell, with four or five whorls, of which the inner ones are more than half exposed; the radii are large and prominent, equally broad with the spaces between them; each is composed of a single arch bent forwards; the keel is round and entire, with a deep furrow on each side of it. The surface of the shell is finely marked with lines of growth. The length of the aperture is about one-third the longest diameter.

From the Blue Lyas of Lyme Regis, Dorset, favoured me by the Rev. W. Buckland. I have named this after H. J. Brooke, Esq. M. G. S. a gentleman well versed in Geology and Mineralogy.

AMMONITES Stokesi.

TAB. CXCI.

Spec. Char. Lenticular, depressed, radiated; radii broad, slightly elevated; inner whorls half exposed; edge crenated; aperture sagittate.

Length of the aperture two-fifths the diameter of the last whorl: the radii are little else than almost straight radiating undulations; they are lost near the edge: the cast shews some signs of concentric striæ upon the surface of the shell: the inner edge of the whorl is strongly defined.

Of this species I have only seen a cast; it was lent me by the Rev. W. Buckland, who obtained it from a Marle-bed, connected with the inferior Oolite, near Bridport in Dorset.

I have the honour of naming this after Charles Stokes, Esq. M. G. S. whose acquaintance I have long valued, and whose abilities deserve our warm remembrances.

NUCULA lævigata.

TAB. CXCII.---*Figs.* 1 *and* 2.

Spec. Char. Transversely elliptical, convex, smooth; posterior side truncated; edge entire.

Nearly related to N. Cobboldiæ, but wider and perfectly smooth: it has not even the striæ beneath the surface, so usual in other species. The lunette is impressed, convex, oblong, and occupies the truncated part of the posterior side; it has a pit or compressed tooth in the hinge, similar to several other species.

Of this I have received fragments from Mrs. Cobbold, which were very pearly, although found in the Crag of Holywells. The perfect specimens represented are from Woodbridge; they are of the usual colour of the Crag, but still betray the once more pearly internal coat. They are nearly as perfect as living specimens; I was glad to see them; they were favoured by Mr. Parkinson.

NUCULA similis.

TAB. CXCII.---*Figs.* 3, 4, *and* 10.

Syn. Arca Nucleus. *Brander, p.* 40. *f.* 101. *Brocchi, II.* 480?

Nucula margaritacea. *Lamarck Env. de Paris,* 193?

Spec. Char. Transversely obovate, depressed, obscurely striated longitudinally; posterior side straight; lunette imbedded; concave in the middle, oblong; edge crenulated.

This differs from the recent British Nucula (Arca nucleus, *Linn.*) in the angle formed by the two lines of hinge

teeth ;—in that it is a right angle,—in this it is greater. The lunette of the recent one is regularly convex ; in the fossil it is depressed in the middle, and also lies deeper. The fossil is generally less convex than the recent, and a trifle wider. The striæ in both are beneath the surface, except near the crenulated edge : in the fossil they are most conspicuous in old shells.

Found in Barton Cliff: the small specimens (figs. 3 and 4), are from Highgate : whether the latter, (fig. 4) should be considered as a distinct species, or only a variety, it is not perfect enough to determine : the striæ upon it are elevated over nearly the whole surface not confined to the margin.

Lamarck and Brocchi having declared their shells to be identical with the Linnean A. nucleus, in conformity with the general opinion respecting these fossils, I have added a query to their synonima, for I have not seen foreign specimens, and they may prove to be different from either of the Hampshire ones, (N. similis and trigona,) which have also been confounded together.

NUCULA trigona.

TAB. CXCII.---*Fig.* 5.

Spec. Char. Ovato-deltoid, compressed, smooth; edge crenulated; hinge-pit short; lunette concave.

Distinguished from N. similis by its triangular form, flatted valves, and concave lunette, which also distinguishes it from A. nucleus of Linnæus.

Sent me along with N. similis from Barton, by Miss Salisbury : it appears to be quite new. I would propose to call the A. nucleus of Linn. Nucula intermedia, because it comes between this and N. similis in form, as the hinge of this is more acute than a right angle.

NUCULA pectinata.

TAB. CXCII.---*Figs.* 6 *and* 7.

SPEC. CHAR. Transversely elliptical, elongated, convex; posterior side truncated; longitudinally furrowed; lunette imbedded, flat, cordate; edge crenulated.

THIS is a large species of Nucula; its surface is covered by small diverging furrows, which are crossed by fine transverse striæ: the lunette is very conspicuous and broad. The specimens are not so opened as to shew the hinge pit, but I think it may be traced in the casts.

I am indebted to W. Borrer, Esq. an enlightened Botanist, for specimens found in clay in Sussex, long since. I have also received several from Folkstone and Dover, where they are abundant in various states. The shell is tender, and filled either with argillaceous Ironstone, or Pyrites: when the shell is decayed there remain neat casts of the inside, shewing the teeth and the two muscular impressions of each valve, which must have been deep in the shell, as the casts of them are much elevated. The shell is pearly within. The two figures 7 are different views of a cast in Ironstone of a similar but wider shell, in which the anterior side is more acuminated; probably this form is produced by the compression of the two valves together.

NUCULA minima.

TAB. CXCII.---*Figs.* 8 *and* 9.

SPEC. CHAR. Transversely ovate, convex, transversely striated; posterior side acuminated; edge entire; lunette defined, elongated.

NEARLY twice as wide as long; the lunette is straight, it reaches from the beak to the angle of the posterior side:

the row of teeth swelling into the cavity of the shell beneath the lunette, give the inside a beaked appearance: the hinge pit is minute.

A small, though not unworthy present, from Miss Salisbury. I suppose it to be rare at Barton, as I have only seen a single valve. Figure 9 is the sketch of a cast from among a cluster that was found at Highgate: they appear to belong to a more gibbose, and perhaps curved species, but are not sufficient to decide from: the shell remains in part upon some of them in a very soft and friable state.

N. minima may possibly be young of Arca minuta of Brocchi, Vol. II. p. 482; but it is only striated, not sulcated; and it differs from his A. nitida, in being rather gibbose than depressed, and not truncated.

TROCHUS punctatus.

TAB. CXCIII.—*Fig.* 1.

SPEC. CHAR. Conical, with straight sides, transversely striated; upper striæ upon each whorl crossed by oblique undulations, lower ones minutely granulated, a narrow band between the two sets.

VERY little higher than wide: the surface is tolerably even: the striæ are numerous; they are most prominent towards the upper parts of the whorls, where they are granulated by small oblique undulations: towards the apex the band is crossed by fine striæ.

From the inferior Oolite of Dundry, near Bristol.

TROCHUS elongatus.

TAB. CXCIII.—*Figs.* 2, 3 *and* 4.

SPEC. CHAR. Conical, elongated, transversely striated; striæ near the apex granulated; each whorl slightly undulated near the upper edge, with an obscure band below the middle; the inferior margin prominent.

BREADTH of the base two thirds the height; the striæ are less numerous, and the undulations larger but shorter than in the preceding: the sides of the whorls are slightly concave.

Very nearly allied to the preceding, but distinguished by the prominent margins of the whorls, and longer form. Found in the same stratum at Dundry. Mr. Braikenridge has in his cabinet a specimen $2\frac{1}{2}$ inches high, and two inches wide, being rather a broad variety.

TROCHUS abbreviatus.

TAB. CXCIII.---*Fig.* 5.

Spec. Char. Conical, shortened, transversely striated; striæ obscurely decussated by oblique lines of growth; inferior margin of each whorl very prominent, obtuse, with an obscure band above it.

Breadth greater than the height; the prominent margins of the whorls are marked by semicircular lines; but they are not regular, being only lines of growth. The base is sharply striated.

This Trochus, and the two species above described, were sent me by George Weare Braikenridge, esq. who collected them at Dundry. I understand that they are not such perfect specimens as might perhaps be obtained at some future period, but I am anxious to make them public on acount of their near resemblance to some Trochi found in a similar stratum in Normandy, of which I have given one or two of the products in illustration of Ammonites Braikenridgii. The Trochi I allude to have largely crenulated margins, which at once distinguish them; but one ofthem is characterized by sharp numerous elevated striæ, which cross the whorls obliquely on their upper parts, and in semicircles over the band and prominent inferior margin; there are vestiges of such striæ in the species before us, but the French shell differs also in having a greater number of transverse striæ, and being of a longer form, it is most like Trochus elongatus. They all have solid columellæ. It appears very remarkable to me, that strata agreeing together in their composition so closely should produce several shells resembling each other, but, as far as I have hitherto learnt, none are precisely the same. I wish to instigate further research. It is a circumstance corresponding with provincial differences among mankind; whether such differences among shells should be considered as specific, may remain a question.

NAUTILUS sinuatus.

TAB. CXCIV.

Spec. Char. Thick, umbilicate, concentrically striated; side depressed, conical; front convex; aperture obtusely sagittate, truncated; the septa have a large sinus on each side.

The most remarkable character of this Nautilus is, the large marginal rounded sinus or lobe on each side the septum: the septum is also much elevated towards the front. The striæ are nearly close together, moderately fine, and elevated: they gradually disappear towards the mouth. The inner whorls are wholly concealed, and few. The greatest diameter is equal to twice the thickness.

For the use of the only specimen I have seen of this, I suppose rare as well as remarkable shell, I am indebted to the well known author, Mr. Parkinson. It was found somewhere near Yeovil, but Mr. Parkinson is not acquainted with the exact locality. It appears to belong to the inferior Oolite: its chambers are lined with carbonate of lime stained with iron, and partly crystallized in acute rhombs. It is not broken so as to shew the situation of the siphunculus.

AMMONITES Herveyi.

TAB. CXCV.

SPEC. CHAR. Gibbose, umbilicated, radiated; margin of the umbilicus squareish; radii numerous, sharp bi or tri-furcate; aperture lunate, with obtuse angles.

THE inner volutions are almost concealed; the small portion that is exposed is seen within a deep umbilicus, the sides of which are nearly straight from one whorl to another: the radii commence within the umbilicus, and having proceeded a small distance over the edge of it, and increased in thickness, they divide into two branches, and pass over the front, uniting again on the other side: it frequently happens, that the branches from one radius, instead of uniting again with each other, join the contiguous branches of two radii on the other side: sometimes there is a third branch which is free at one end. The thickness nearly equals half the diameter.

The larger specimen was found on the estate of the Earl of Bristol, near Spalden, in Lincolnshire: I have named it to commemorate the present enquiring and penetrating spirit of that noble family. The smaller is from Bradford: it has more of the structure of the shell remaining: they both appear to be from the lower Oolite. The outline is a section of the last whorl. Mr. Cumberland has sent me the same from Knowles Hill, in Somersetshire.

VENUS rustica.

TAB. CXCVI.

Spec. Char. Sub-orbicular, gibbose, smooth; anterior side obscurely defined, convex; a thick lateral tooth within the anterior slope.

Young shells of this species are nearly orbicular, if we may judge from the strong lines of growth, with a slight depression to distinguish the anterior side: as they advance in age they become rather more transverse. The hinge of the right valve is furnished with two thick teeth, which are united at their upper parts, and one elongated lamellar tooth; these three are placed near the beak: at a distance from the beak on the anterior side is another tooth; it is short, thick, and blunt. The lunette is cordate, obtuse, and not distinctly marked out.

The above description is taken from a single valve: it appears to be a full grown shell, and has been distorted in the latter part of its growth, as old shells frequently are, so as to make it oblong, and give it a tumid edge. There are marks of a Flustra that once covered its surface still remaining upon it. Its being strong and rather clumsy in its form has suggested its name. I am indebted to the Rev. Mr. Lambert, whose name I have had occasion formerly to mention, for the use of the specimen; he obtained it from the Crag pits of ——Woolnough, Esq. at Hollesley, Suffolk. I do not consider it properly arranged as a Venus; but until some necessary divisions are made in that Genus, and in Lucina, to which it belongs more properly, it must remain there.

CARDITA? producta.

TAB. CXCVII.---*Fig.* 1.

SPEC. CHAR. Transversely oblong, gibbose, with six or seven angular longitudinal ridges; anterior side produced, plain.

THE length is about two-thirds the width: the ridges are highest towards the posterior half, and I suspect in the young shells they are tuberculated. The beaks are rather prominent. A cast from the inferior Oolite, near Bath, the Rev. H. Steinhauer. I have it young in Pisolite, from Chapel House, near Chipping Norton, given me by Mr. B. Clark; and also from Peterborough, in compact limestone, by favour of Mr. H. Jenkins.

CARDITA? obtusa.

TAB. CXCVII.---*Fig.* 2.

SPEC. CHAR. Transversely obovate, recurved, gibbose, with from 7 to 10 longitudinal, nearly equal, tuberculated ridges.

THE anterior side is largest, obtuse, and plain; the slope above it is concave; the length is but little less than the width.

From the inferior Oolite, near Bath, and at Dundry, both casts: it was brought me from the latter place by Lady Wilson, whose zeal for collecting has seldom been equalled.

CARDITA? lirata.

TAB CXCVII.---*Fig.* 3.

SPEC. CHAR. Transversely oblong, gibbose, with 9 or 10 longitudinal tuberculated ridges; the ridge separating the posterior side is much the highest.

THE posterior side is well defined by a large ridge; it is convex, and has two or three tuberculated ridges passing over it; the anterior side is not so plain as in either of the other species upon this plate; the length is twice the width.

Occurs in the Lyas near Bath, from whence it was sent me by the Rev. H. Steinhauer, and also in the Cornbrash, as I learn from a mutilated specimen. On the Lyas specimen, part of the surface, formerly occupied by the shell, is now covered with a coat of calcarious spar, which shews that the shell was very thin.

CARDITA? deltoidea.

TAB. CXCVII.---*Fig.* 4.

SPEC. CHAR. Very gibbose, obtusely triangular, with 8 or 9 longitudinal rugged ridges; anterior side pointed.

THE ridges are largest near the posterior part; they are very irregularly tuberculated: the beaks being prominent, and the anterior side pointed, give the triangular contour.

I have figured a specimen from Peterborough, cast in blue Lyas, and encrusted with Pyrites. I have another specimen in Cornbrash limestone, from Lechlade, in Gloucestershire. I have also a specimen nearly resembling it, but which may hereafter prove to be a distinct species, as it is flatter upon the posterior side, and is wider; it is in a ferruginous sandy limestone, from Kelloways Bridge; a portion of the shell remains upon it: it is thick, and is pearly beneath the outer coat.

These four species of Cardita have been long known by the appellation of Heart Cockles, and have been distinguished by their form, and the number of their ridges; both characters are liable to variation, but yet, the four species above described, may readily be recognized: it would have been fortunate had each been confined to a separate stratum. It is impossible to be certain of the Genus.

In Smith's Stratigraphical System of organized fossils mention is made of them under the generic name of Cardium, first in the Cornbrash, on p. 65, he describes the obtusa, and at letter *c* the lirata; and refers to them as the same that are found in the under Oolite, see p. 104. The Cardita producta is refered by him to the Fuller's earth rock. I have seen in Miss Benett's hands a specimen of the C. producta, from the inferior Oolite near Bayeux.

PHOLAS. *Linn.*

GEN. CHAR. A transverse bivalve, gaping at both extremities, with one or more accessory valves upon the back; no shelly tube.

ONE or more accessory valves, an elongated tooth within each beak, and a more or less muricated surface, are characters that belong to a family of shells, the animals of which bore holes in stone or wood for protection: the Pholas of Linnæus is the head of it: his Teredo also belongs to it: the first is extremely scarce in a fossil state, the latter very abundant: they are both confined to the newer strata. The recent Pholades may probably be divided into several genera, characterized by the form of the valves, or number of accessory plates: the shelly tube will always distinguish the Teredo.

PHOLAS cylindricus.

TAB. CXCVIII.

SPEC. CHAR. Transversely elongated, nearly cylindrical; posterior sides muricated, pointed, with a sinus in the edge; beaks concealed by a reflexion of the edges of the back.

THE general form of this is a slightly compressed cylinder: the valves are transversely striated, and have many longitudinal elevations; where these cross on the posterior half, are formed many sharp flat spines, but the other side is nearly smooth; accessory valves have not been met with, but from the analogy it bears to P. parva, it should seem to be furnished only with one. It differs

from P. parva in its greater width, and the less degree of curvature of the posterior sinus; it is also smoother, and in some respects resembles P. candida.

The P. Campechiensis, referred to by Parkinson, at p. 198, Vol. III. is probably distinct.

I am indebted to Mr. Parkinson for the use of the specimens of this tender shell, found, rarely perfect, in Crag.

MUREX rugosus, var. (β.).

TAB. CXCIX—*Figs.* 1 *and* 2.

Spec. Char. Elongated, subfusiform, transversely and uniformly striated; spire pointed, with about 12 longitudinal costæ; volutions ventricose; beak short, open.

Syn. Murex rugosus. *Parkinson, III.* 64. *t.* 5. *f.* 16.

Above twice as long as wide: in this variety the last whorl is nearly free from costæ or undulations, it is drawn out into a short straight beak; the outer lip is thickened, but appears to have no striæ within its edge; aperture elliptical.

The larger specimen (fig. 1) is in Mr. Parkinson's collection; it is from the Crag, near Malden: the smaller one (fig. 2) I picked up at Plumstead from among sandy gravel.

MUREX costellifer.

TAB. CXCIX.---*Fig.* 3.

Spec. Char. Subturrited, transversely striated, longitudinally costated; whorls rather ventricose; aperture ovate, expanded towards the beak; beak very short, spreading; costæ numerous, slender.

There are about 18 costæ or undulations around the spire: the striæ are sharp and numerous: the aperture is about as long as the shell is wide, that is, a little more

than a third of its length: the slightly expanded lip is characteristic, it is entire.

A Crag shell from Malden, in Mr. Parkinson's collection.

MUREX echinatus.

TAB. CXCIX.---*Fig.* 4.

Spec. Char. Turrited; whorls round, reticulated, with acute tubercles upon the angles of the meshes; outer lip striated within; beak short.

Syn. Murex echinatus. *Brocchi*, 2, 423. *t.* 8. *f.* 3.

The reticulated surface is produced by a number of longitudinal sharp ridges, crossed by transverse chords placed at about the same distance from each other, and equally elevated with the ridges; at the points of their intersection they are raised into short angular spines; the whorls are very round, the last one suddenly drawn out into the beak, which, though not long, appears to be more taper in the individuals before us than in those Brocchi described. The lip is thickened and furrowed internally. Length three times the width.

These specimens, which are smaller than the Italian ones, are from the Crag at Malden; they are in Mr. Parkinson's cabinet. It is remarkable that the columella is wanted, or eaten out, a circumstance I have observed in some recent shells.

MUREX curtus.

TAB. CXCIX.---*Fig.* 5.

SPEC. CHAR. Ovate, pointed, subventricose, longitudinally ribbed, transversely striated; aperture oval; beak short, recurved; whorls internally striated with elevated lines.

ABOUT twice as long as wide, with 12 rounded undulations or costæ upon each whorl; the striæ are sharp and rather distant, they are stronger upon the base; the beak is a little curved and open; the substance is thin, therefore the costæ appear as concave undulations within the whorl.

An interesting unique shell from the blue clay of Highgate Hill.

MUREX gradatus.

TAB. CXCIX.---*Fig.* 6.

SPEC. CHAR. Ventricose, longitudinally ribbed, transversely striated; spire short, acute; costæ varicose above; aperture oval, with a short expanded beak.

THE enlargement of the costæ, which are about 10 in each round, produces a square appearance on the upper parts of the whorls, which seem to rise above each other like steps: the spire is small, and almost slender enough to be called mucronate. Width about two-thirds the length: the inner lip is smooth.

From Plumstead. I believe rare, as I have seen but one.

AMMONITES Banksii.

TAB. CC.

SPEC. CHAR. Discoid, very thick; inner turns exposed; sides concave, largely tuberculated; front fluted, slightly convex; aperture transverse, almost three times as long as wide.

A VERY bold formed shell; the narrow sides of the whorls are much relieved from each other, they are convex, and occupied by about 10 large obtuse tubercles: the great width of the convex margin, which is obtusely fluted, gives the whole a very massive appearance. There are about five turns, the last but one is in diameter equal to the thickness of the whole.

In a valuable packet of fossils belonging to the inferior Oolite, sent by some disinterested friend at present unknown to me, from the west of England, was the ponderous mass represented in this plate; it contains the ferruginous grains peculiar to that rock, with Belemnites, fragments of other shells, and also a piece of wood, changed almost into charcoal. I hope my friend will make himself known, and communicate the locality.

I have indulged my feelings of esteem and friendship, by giving this magnificent Ammonite the name of that staunch supporter of science in general, and of natural history in particular, who has presided so long and so ably over the Royal Society.

AMMONITES Blagdeni.

TAB. CCI.

SPEC. CHAR. Subcylindrical, obtusely fluted, umbilicate; umbilicus reaching to the margin, conical, with large radii terminating upon the edge in a tubercle; aperture transverse, quadrangular, three times as wide as long.

THE umbilicus is deep; it occupies the whole side; the tubercles round its edges, about 22 in each turn, are obtuse in the cast of the inside, but where there are some remains of the outer surface they appear to be spiniform, there are four or five furrows on the front to each; the front is very slightly convex.

A massive specimen from the lower Oolite, containing Belemnites, other Ammonites, &c.: it was given me by my lamented friend, Dr. J. C. Lettsom. I have named it after the highly discerning, meritorious, yet most unassuming Sir Charles Blagden. The analogy between this and the preceding, may remind conchologists of the long cordial friendship, subsisting between Sir Charles and Sir Joseph Banks.

AMMONITES Brocchii.

TAB. CCII.

SPEC. CHAR. Compressed; sides hollow, radiated; inner whorls half concealed; front circular, with many obtuse ridges; aperture lunate.

VOLUTIONS three or four, very round; twenty radii extend nearly half over them, the rest of their surface is covered by nearly six times as many obtuse, arched, not very prominent ridges. Were the hollow sides considered as umbilicate, the umbilicus would be conical but would have no defined edge; the aperture is lunate, inclining to transversely elliptical. Thickness half the diameter. The septa are remarkably numerous, and finely sinuated.

From the same friend, and probably from the same place, although of a greyer colour, as A. Banksii, I received the large specimen; it seems to have been exposed to the weather.

The small specimen is from Dundry, by favour of G. W. Braikenridge, Esq.

The name is to commemorate the author of a recent valuable work upon the fossil shells of his own country.

VENUS lentiformis.

Cytherea, Lam.

TAB. CCIII.

SPEC. CHAR. Orbicular, depressed, with concentric, reflected, minute, imbricated, ridges; anterior slope depressed, terminated by an angle in the margin.

SYN. Venus exoleta. *Parkinson III.* 189.

A SHELL that at first sight might be taken for the Venus exoleta, from which it is distinguished by the flat space upon the anterior slope, and the angle upon the margin. The striæ are few and much elevated near the anterior slope, but soon are doubled, or even trebled, as they proceed: upon comparison it is found to be thinner, flatter, more closely striated, and rounder on the posterior side. The lunette is also more pointed with straight sides.

From the Crag of Essex and Suffolk, Mr. Parkinson's cabinet.

INDEX TO VOL. II.

	Tab.	Page.
Ammonites angulatus	107 *f.* 1	9
auritus	134	75
Banksii	200	229
Blagdeni	201	231
Braikenridgii	184	187
Brocchii	202	233
Brongniarti	A *f.* 2	190
Brooki	190	203
Bucklandi	130	69
Calloviensis	104	3
communis	107 *f.* 2&3	10
Conybeari	131	70
constrictus	A *f.* 1	189
Duncani	157	129
excavatus	105	5
fimbriatus	164	145
Gervillii	A *f.* 3	189
giganteus	126	55
Greenoughi	132	71
Henleyi	172	161
Herveyi	195	215
inflatus	178	170
Loscombi	183	185
monile	117	35
Nutfieldiensis	108	11
obtusus	167	151
plicatilis	166	149
rostratus	173	163
rusticus	177	171
splendens	103	1
Stokesi	191	205
varians	176	169
vertebralis	165	147
Walcotii	106	7
Astarte cuneata	137 *f.* 2	82
elegans	*ib. f.* 3	*ib.*
lineata	179 *f.* 1	174
lurida	137 *f.* 1	81
obliquata	179 *f.* 3	173
plana	*ib. f.* 2	*ib.*
Auricula incrassata	163 *f.* 1,2 & 3	143
simulata	*ib. f.* 5&8	144
turgida	*ib. f.* 4	143
Buccinum elongatum	110 *f.* 1	15
granulatum	*ib. f.* 4	18
reticosum	*ib. f.* 2	17
rugosum	*ib. f.* 3	16
Cardita deltoidea	197 *f.* 4	220
lirata	*ib. f.* 3	*ib.*
obtusa	*ib. f.* 2	219
producta	*ib. f.* 1	*ib.*
tuberculata	143	97
Cardium proboscideum	156 *f.* 1	127
semigranulatum	144	99
umbonatum	156 *f.* 2,3 & 4	128
Cascis bicatenatus	151	117
Cerithium cornucopiæ	188 *f.* 1,3 & 4	197
Cerithium dubium	147 *f.* 5	108
funatum	128	64
funiculatum	147 *f.* 1&2	107
geminatum	127 *f.* 2	63
giganteum	188 *f.* 2	199
intermedium	147 *f.* 3&4	107
melanioides	*ib. f.* 6&7	109
pyramidale	127 *f.* 1	61
Chama digitata	174	165
Cirrus acutus	141 *f.* 1	93
nodosus	*ib. f.* 2	94
plicatus	*ib. f.* 3	*ib.*
Cyclas cuneiformis	162 *f.* 2&3	140
deperdita?	*ib. f.* 1	139
obovata	*ib. f.* 4,5, &6	140
Gryphæa dilatata	149 *f.* 1	113
dilatata β	*ib. f.* 2	*ib.*
incurva	112 *f.* 1&2	23
obliquata	*ib. f.* 3	24
Hamites armatus	168	153
Helix cirriformis	171 *f.* 2	160
Gentii	145	101
globosus	170	157
striatus	171 *f.* 1	159
Lima gibbosa	152	120
Lymnæa fuciformis	169 *f.* 2&3	155
minima	*ib. f.* 1	156
Mactra arcuata	160 *f.* 1&6	135
cuneata	*ib. f.* 7	136
dubia	*ib. f.* 2,3, & 4	*ib.*
ovalis	*ib. f.* 5	*ib.*
Magas pumilus	119	40
Murex carinella	187 *f.* 3&4	196
coniferus	*ib. f.* 1	195
costellifer	199 *f.* 3	225
curtus	*ib. f.* 5	227
echinatus	*ib. f.* 4	226
fistulosus	189 *f.* 1&2	201
gradatus	199 *f.* 6	227
regularis	187 *f.* 2	195
rugosus (β)	199 *f.* 1&2	225
tubifer	189 *f.* 3—8	201
striatus β(carinatus)	109	13
Nautilus Comptoni	121	45
elegans	116	33
intermedius	125	53
obesus	124	51
simplex	122	47
sinuatus	194	213
striatus	182	183
truncatus	123	49
Nucula Cobboldiæ	180 *f.* 2.	177
lævigata	192 *f.* 1&2	207
lanceolata	180 *f.* 1	178
minima	192 *f.* 8&9	209
pectinata	*ib. f.* 6&7	*ib.*
similis	*ib. f.* 3,4, & 10	207

	Tab.	Page.
Nucula trigona	192 *f.* 5	208
Orthocera annulata...	133	73
Ostrea accuminata...	135 *f.* 2&3	78
canaliculata	*ib. f.* 1	77
deltoidea ...	148	111
gregarea.....	111 *f.* 1&3	19
palmetta ...	111 *f.* 2	20
Patella equalis	139 *f.* 2	87
lævis.....	*ib. f.* 3&4	86
latissima	*ib. f.* 1&5	85
rugosa	*ib. f.* 6	87
unguis	*ib. f.* 7&8	88
Pecten Beaveri	158	131
equivalvis ...	136 *f.* 1	83
fibrosus	*ib. f.* 2	84
orbicularis ...	186	193
Phasianella angulosa	175 *f.* 2	168
minuta ...	*ib. f.* 3	*ib.*
orbicularis	*ib. f.* 1	167
Pholas cylindricus...	198	223
Plagiostoma cardiiformis	113 *f.* 3	26
obscura.....	114 *f.* 2	28
ovalis	*ib. f.* 3	27
pectinoides	*ib. f.* 4	28
punctata ...	113 *f.* 1&2	25
rigida	114 *f.* 1	27
Planorbis cylindricus	140 *f.* 2	90
equalis	*ib. f.* 1	89
enomphalus	*ib. f.* 7,8, & 9	92
hemistoma ..	*ib. f.* 6	91
lens	*ib. f.* 4	*ib.*
obtusus	*ib. f.* 3	*ib.*
radiatus.....	*ib. f.* 5	92
Pleurotoma acuminata	146 *f.* 4	105
attenuata	*ib. f.* 1	103
colon.....	*ib. f.* 7&8	106
comma...	*ib. f.* 5	105
exorta ...	146 *f.* 2	104
Pleurotoma rostrata	146 *f.* 3	104
semicolon	*ib. f.* 6	106
Sanguinoaria Hollowaysii	159	133
Spirifer cuspidatus...	120	42
Tellina obliqua	161 *f.* 1	137
obtusa	179 *f.* 4	175
ovata	161 *f.* 2	138
Terebratula acuta ...	150 *f.* 1&2	115
Lyra	138 *f.* 2	83
octo-plicata	118 *f.* 2	37
pectita	138 *f.* 1	83
plicatilis ...	118 *f.* 1	37
resupinata..	150 *f.* 3&4	116
Wilsoni ...	118 *f.* 3	38
Trochus abbreviatus	193 *f.* 5	212
anglicus ...	142	95
concavus ...	181 *f.* 3	180
dimidiatus	*ib. f.* 4	181
duplicatus.	*ib. f.* 5	*ib.*
elongatus .	193 *f.* 2,3, & 4	211
lævigatus...	181 *f.* 1	179
punctatus...	193 *f.* 1	211
similis	181 *f.* 2	179
Unio crassissimus ...	153	121
crassiusculus ...	185	191
hybridus.....	154 *f.* 2	124
Listeri	*ib. f.* 1,3, & 4	123
Venus gibbosa	155 *f.* 3&4	126
incrassata.....	*ib. f.* 1&2	*ib.*
lentiformis.....	203	235
rustica	196	217
Voluta ambigua, var.	115 *f.* 5	31
Lamberti.....	129	65
luctator	115 *f.* 1	29
spinosa	*ib. f.* 2&4	30
spinosa β ...	*ib. f.* 3	*ib.*

CORRIGENDA.

Page 13, line 3, for "α" read β.

42, line 10, add TAB. CXX.

61, " CERITHIUM pyramidalis" read *CERITHIUM pyramidale.*

Pages 77, 79, and 81 to 88 descriptive of tabs. 133 to 138 read 73, 75 *and* 77 *to* 84.

Page 88, line 14, add *and* 8.

95, " TROCHUS similus" read *TROCHUS anglicus*; so named to distinguish it from a French shell extremely like it, and to avoid a repetition of the name similis.

124, " UNIO hybrida" read *UNIO hybridus.*

126, line 27, dele " and 4."

129, last line, " Neotts" read *Neots.*

179, line 2, " Fig. 2" read *Fig.* 1.

201, line 7 from the bottom " CXXXIX" read *CLXXXIX.*

I am informed by Miss Benett that it is the Chalk marl, and not the lower or hard Chalk that is characterized by the AMMONITES *varians, Tab.* 176; it has, however, been found in the hard Chalk, see page 169.

ADDITIONAL LOCALITIES TO SHELLS DESCRIBED IN VOLS. I. AND II.

For the following localities I am indebted to Mr. Holloway. I trust that I shall be enabled to extend a list so important to Geologists, at some future period.

Cardium Plumsteadiense, *Tab.* 14, fragments are found at Stubbington.

Cassis carinatus, *Tab.* 6, Stubbington.

Dentalium cylindricum, *Tab.* 79, Sand pits, Emsworth Common.

Dentalium entalis, *Tab.* 70, Stubbington, filled with pyrites.

Fusus longævus, *Tab.* 63, ditto, small.

Melania sulcata, *Tab.* 39, Bricklesham Bay, Sussex.

Natica depressa, *Tab.* 5, East Cowes, Isle of Wight.

Pecten quinquecostata, *Tab.* 56, Emsworth, in Flint.

Pectunculus costatus, *Tab.* 27, Stubbington, worn.

Rostellaria? lucida, *Tab.* 91, ditto.

Scalaria acuta, *Tab.* 16, ditto.

Trochus Benettiæ, *Tab.* 98, ditto.

Turritella conoidea, *Tab.* 51, Bricklesham Bay.

Venericardia planicosta, *Tab.* 50, Stubbington.

Voluta spinosa, *Tab.* 115, ditto.

The Chama digitata, *Tab.* 174, has been found by Prof. Hailstone, at Huntcliffe, near Redcar, N. of Whitby, Yorkshire.

A SUPPLEMENTARY INDEX TO VOL. II.

Arranging the Shells *described therein according to the several* Strata *in which they were found imbedded, from the newest towards the oldest in the British Series.*

INSTEAD of any prefatory remarks of my own, I will insert the following Letter, received from my kind friend Mr. Farey, viz.

SIR,——I beg to apologize to your numerous and highly respectable Correspondents and Readers, for my delay in furnishing the Stratigraphical Index, sent herewith. I had foreseen, since the perusal of my friend *Mr. Smith's* "Stratigraphical System," Part I. and the three first numbers of his "Strata Identified," that a great deal of care and pains were necessary, (for which I could not until lately spare the time,) in collating these works of his, with the whole of the stratigraphical information contained in all your published numbers of "Mineral Conchology," before Indexes, at all satisfactory, could be made out, for you and Mr. Tilloch, such as I had imperfectly done at the conclusion of your first volume, in September, 1815.

I was in hopes, that by some delay, my labour in hunting through maps *for the situations* of a considerable portion of *the places* mentioned in your's and *Mr. Smith's* works, might ere this have been greatly shortened, by a reference to the manuscript Index which my valued friend, the able and indefatigable *Mr. Arrowsmith*, of Soho Square, has for near two years been preparing; and which is intended to contain *every Name*, of towns, villages, farms and cottages, mills, mines, collieries and quarries, rivers, streams, and water-falls, bays, headlands, cliffs, and light-houses, mountains, hills and valleys, parks, forests and woods, &c. &c.; together with the district names, &c. which are to be found, not only

in his own large and unparalleled *Map of England and Wales*, but also in all the largest county maps, local maps of canals, roads, mining districts, &c. &c. which either his own large collection contains, or to which he can have access, through the kindness of the friends of science: unfortunately, however, for me, this great *Index to Localities*, although all the names from printed maps were collected out, (and ascertained by bearings and distances,) and it is now rapidly proceeding towards its final revision and completion, it has not been in a state for me to consult it, as otherwise the kindness and liberality of Mr. A. would have permitted, prior to its publication, which now will soon take place, with the addition of the population, and *a blank column* for future corrections and additions, and to enable this volume to be made by scientific, curious, or travelling persons, into an *Universal Index to Localities in South Britain!*

In my Stratigraphical Index to Vol. I., I took the liberty of placing 33 notes of interrogation (?, see Phil. Mag. Vol. XLVI. p. 212, note,) after as many species of shells, which had (by *the places* mentioned in that volume) been referred *to other strata*, besides that particular stratum, in which I concluded, from your descriptions, that the specimen drawn and actually described, had been found entombed. I could not hope, at the time of making these first stratigraphical arrangements of the shells and localities which you had described and mentioned, that I could escape errors: I regret, however, to find, now that further information is afforded, that they are so numerous as I find them to be; and more so, that the means do not at present exist of correcting many errors, which doubtless yet must remain, in that and the present Supplementary Index, after all that I can at present do; or, until your kind and generous friends and contributors send you up, either as gifts or

loans, a far *greater number of individual shells, diversified as much as possible as to their localities, and not forgetting in any instances to name and precisely describe these localities;* without which additions, fossil shells are of no real value for improving the present infant state of geological knowledge.

In the extended comparison of *shells, named* by you or Mr. Smith, with their *places* and *strata*, to which I have already alluded, I have been concerned to find, according to the best opinion I can form, from the local facts mentioned by you and Mr. Smith regarding them, and what I know of the ranges of the several strata, and of the distribution of fossil shells in their peculiar beds, from the experience I have gained in such quarries, banks, pits, canals, wells, &c. which produce them, almost throughout Great Britain, that no less than 104 of the shells (including some varieties) already named or described in the three works mentioned, should, for useful geological purposes, be made to form 279 species, each with its own compound name; or at least, that these 279 *shells of as many distinct beds* of the strata* (excepting here any errors in the recorded facts) should be distinguished, by the usual addition of *Greek* letters, *as distinct varieties.* This latter plan I have adopted in the Stratigraphical Index to Vol. II. instead of merely adding ?'s, as I did in the former Index; and for the information of your Readers hereon, I beg the favour of you to insert as follows, the names of all the described shells, &c. which as far as I can yet judge, require these marks, to distinguish the varieties of *different strata*, viz.

* It may be proper to keep in view, that I mean by this term, (as all practical men do) the thinnest natural divisions of Strata; and not in any case thick masses, or whole mountains, although of one mineral species, as some writers imply by its use.

	Varieties or Species?
Ammonites Calloviensis	2
communis	4
concavus	2
elegans	2
ellipticus	2
Herveyi	2
modiolaris	2
Nutfieldiensis	2
planicosta	3
splendens	2
striatus	2
tuberculatus	2
Walcotii	5
(SS p. 56, &c.)	2
(111)	2
(111)	2
Astarte ovata	4
Avicula costata	7
Cardita? deltoidea	2
lirata	2
obtusa	2
producta	3
Cerithium cornucopiæ	2
melanioides	2
Chama digitata	2
(45)	2
Cidaris diadema	2
(19)	2
(33)	3
(53)	2
(69)	3
Clavicula cucumerina	2
Clypeus sinuatus	2
(54)	5
Conulus (70)	3
Ellipsolites funatus	2
Euomphalus catillus	2
Gryphæa dilatata	7
incurva	3
(117)	2
Helix (49)	2
Lima gibbosa	2
Mactra gibbosa	2
(91)	2
Madrepora flexuosa?	3
porpites	3
Melania Heddingtonensis	2
striata	3
Modiola bipartita	2
depressa	2
(64)	3
Murex latus	2
Murex rugosus	2
Mya (92)	3
Natica glaucinoides	2
Nautilus intermedius	2
lineatus	2
Ostræa acuminata	4
crista-galli	6
deltoidea	3
gregarea	2
Marshii	2
rugosa	2
Patella latissima	2
Pecten arcuatus	2
fibrosus	7
quinquecostatus	2
(73)	2
Perna aviculoides	2
Plagiostoma gigantea	3
spinosa	3
(8)	2
Planorbis euomphalus	3
Pleurotoma rostrata	2
Productus aculeatus	2
Rostellaria (58)	2
Scaphites obliquus	2
Serpula crassa	3
(41)	2
Spatangus subglobosus?	2
(20)	2
Terebratula biplicata (3)	2
carnea	2
crumena	3
digona	3
intermedia	4
lateralis	2
obsoleta	8
ornithocephala	5
subrotunda	3
subundata	2
Trigonia clavellata	7
costata	6
curvirostra	2
Trochus (41)	2
Turbo (41)	2
Turrilites costatus	2
Turritella conoidea	2
Unio acutus	2
Listeri	3
(89)	2
Venus equalis	2
(61)	2
Vivipara fluviorum	2

Where *dots* are used in the above list, in the place of the *specific* or trivial name, reference is intended, to those species, which, although not *named* by Mr. Smith in his Strat. Syst. are by his references therein, described, as being of *the same species*, in two or more strata; and in parenthesis I have added, the first of his pages, in which each of such shells occur.

For an early number of the "Philosophical Magazine," it is my intention to communicate to Mr. Tilloch, the particulars of the *strata* and *places*, of each of the above 279 shells, with references to Min. Conch. and to Mr. Smith's two works on fossil shells; and I intend to accompany the same by a few general remarks, as to the great use and importance of fossil shells, in untheoretical and useful geology. I am extremely desirous of calling the attention of your Readers, and of requesting them to contribute all they can, in the way of *additional specimens*, and more precise localities, &c.* from the former and from new places of the shells in the above list, particularly the Ammonites, Terebratula, Ostrea and Gryphites, Cardita? Trigonia, Plagiostoma, Unio, Pecten, &c.

I have prepared, and shall in a few days send to Mr. Tilloch, (as I did on the conclusion of your first volume,) a List of the PLACES, alphabetically arranged, and *their situations*, from whence the shells described in Vol. II. are mentioned to have been obtained, *the stratum* at each

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* Where several species or varieties of shells occur in the sinking of any particular quarry, well, pit, &c. or in the face of any cliff or bank, it would be of vast importance to know, their relative places and *heights above each other;* because this order will be found invariable, in different places, after making allowance for those particular species, which were the cotemporaries of one or more shorter lived species.

place, as shewn by Mr. Smith's "Map of the Strata," published by Mr. Cary, (as correctly as the want of bearings and distances, &c. in so many instances would now permit of being done,) and the *species and varieties of shells* at each place, with references to the plates and figures in Min. Conch.

Conceiving your excellent work, to be contributing in a very eminent degree to the solid advancement of geological knowledge, I am very desirous to see it proceed more rapidly, by appearing *Monthly;* and I hope, not only that your present subscribers would approve this change, but that many new subscribers from amongst liberal and well-informed land-owners, and country Gentlemen and Ladies, would be attracted, by such an announcement of more speedy publication.—Wishing every success to your useful undertakings, for promoting a more intimate acquaintance with the works of the all-wise and beneficent Creator,

I remain,

Your obedient humble servant,

JOHN FAREY, Senr.

37, *Howland Street, Fitzroy Square,*
26th September, 1818.

A Stratigraphical List of STRATA, SHELLS, *and* PLACES, *by Mr. John Farey, Sen.*

ALLUVIA, or moved ruins of Strata
Gryphæa dilatata *var ε, tab* 149, Pakefield Gravel Pit
Patella latissima β, t 139, f 5, Pakefield ditto

COWES ROCK of Limestone; or pretended *fresh-water Formation!* of some Writers.
Helix globosus, t 170, Shalcomb?
Lymnæa fusiformis, t 169, f 2 and 3, Cowes
minima, t 169, f 1, Cowes
Phasianella angulosa, t 175, f 2, Shalcomb?
minuta, t 175, f 3, ditto
orbicularis, t 175, f 1, ditto
Planorbis cylindricus, t 140, f 2, Cowes
euomphalus, α, t 140, f 7, ditto
lens, t 140, f 4, ditto
obtusus, t 140, f 3, ditto

LONDON CLAY, upper part, with Ludus Helmontii (*dun blue* in Mr. Smith's Map.)
Auricula simulata, t 163, f 5 to 8, Barton and Highgate
turgida, t 163, f 4, Highgate
Cardium semigranulatum, t 144, Barton, Regent's Park, and [White Conduit House
Cerithium cornucopiæ α, t 188, f 1, 3, and 4, Stubbington (beach)
dubium, t 147, f 5, Stubbington
funatum, t 128, Hordle, and Newhaven Castle-hill
geminatum, t 127, f 2, Barton
giganteum, t 188, f 2, Stubbington, and Grignon
pyramydale, t 127, f 1, Barton, Hordle, and near [Paris
Murex carinella, t 187, f 3 and 4, Barton
coniferus, t 187, f 1, Highgate
curtus, t 199, f 5, ditto
fistulosus, t 189, f 1 and 2, Barton
regularis, t 187, f 2, ditto
tubifer, t 189, f 3 to 8, ditto, Grignon, and Highgate
Nucula minima, t 192, f 8 and 9, ditto, ditto
similis, t 192, f 3, 4, and 10, Barton, Highgate, and [near Paris.
trigona, t 192, f 5, Barton
Pleurotoma acuminata, t 146, f 4, Highgate
attenuata, t 146, f 1, Stubbington
colon, t 146, f 7 and 8, Barton
comma, t 146, f 5, Stubbington
exorta, t 146, f 2, Barton
rostrata α, t 146, f 3, ditto
semicolon, t 146, f 6, Stubbington
Sanguinolaria Hollowaysii, t 159, Bracklesham Bay
Venus incrassata, t 155, f 1 and 2, Brockenhurst
Voluta ambigua (monstrosa) t 115, f 5, Barton
luctator, t 115, f 1, Barton, near Paris, and Richmond [Well
spinosa α, t 115, f 2 and 4, Barton
—— β, t 115, f 3, Barton, near Paris, and Stubbington

CRAG Marl,* or soft Limestone, in or on ? the London Clay *(light brown)*.
Astarte obliquata, t. 179, f 3, Holywell
plana, t 179, f 2, Bramerton, perhaps Alluvial?
Buccinum elongatum, t 110. f 1, Walton le Soken
granulatum, t 110, f 4, Holywell
reticosum, t 110, f 2, ditto
rugosum, t 110, f 3, ditto
Cassis bicatenatus, t 151, Bawdsey Cliff
Gryphæa incurva β, t 112, f 2, at Birdbrook, Alluvial?
Mactra arcuata, t 160, f 1 and 6, Holywell
cuneata, t 160, f 7, Bramerton
dubia, t 160, f 2 to 4, Holywell and Woodbridge
ovalis, t 160. f 5, Suffolk
Murex costellifer, t 199, f 3, near Malden
echinatus, t 199, f 4, ditto
rugosus β, t 199, f 1, ditto
striatus α and β, t 109, Holywell (I. p. 61)
Nautilus intermedius β, t 125, Birdbrook, and Culford Hall
Nucula Cobboldiæ, t 180, f 2, Bramerton, Holywell, and Roydon Green
lanceolata, t 180, f 1, Bawdsey
lævigata, t 192, f 1 and 2, Holywell, and Woodbridge
Patella equalis, t 139, f 2, Holywell
unguis, t 139, f 7 and 8, ditto
Pholas cylindricus, t 198, Walton le Soken
Tellina obliqua, t 161, f 1, and m, Aldborough, Holywell, Norfolk, and Suffolk
obtusa, t 179, f 4, Bramerton, Roydon Green, and Woodbridge
ovata, t 161, f 2, Bramerton, Framlingham, and Suffolk
Trochus lævigatus, t 181, f 1, Holywell
similis, t 181, f 2, ditto
Unio crassiusculus, t 185, Bawdsey Cliff
Listeri γ, t 154, f 1, Roydon Green, and Suffolk
Venus gibbosa, t 155, f 3, in Suffolk
lentiformis, t 203, Suffolk, and Walton, (Essex Cliff)
rustica, t 196, Hollesley
Voluta Lamberti, t 129, Aldborough, Bawdsey, Harwich, and Holywell

LONDON CLAY, lower part, with Woolwich Loam and chert *nodules*, Potter's Clay, &c. *(brown)*.
Cerithium funiculatum, t 147, f 1 and 2, Plumstead, (with cherts)
intermedium, t 147, f 3 and 4, Charlton
melanioides α, t 147, f 6 and 7, ditto, New Cross, Newhaven, Castle hill, and Southfleet
Cyclas cuneiformis, t 162, f 2 and 3, Charlton, New Cross, Plumstead, and Wight Isle
deperdita ?, t 162, f 1, Charlton, near Paris, Plumstead, and Woolwich
obovata, t 162, f 4 to 6, Barton, Charlton, New Cross, and Plumstead
Gryphæa dilatata α, t 149, f 1, Bennington, Coney Weston, and Suffolk

* In page 67 a sketch of the "District of Crag Pits" is given, and the following places mentioned, besides those already enumerated in these two volumes, as localities of the Crag shells described, viz. Balstead, Brightwell, Foxhall, Melton, Shotisham, Sudbourn, and Wherstead heath.

LONDON CLAY, &c.
Murex gradatus, t 199, f 6, Plumstead
rugosus γ, t 199, f 2, ditto
Ostrea deltoidea β, t 148, Lopham, and near Paris
Planorbis hemistoma, t 140, f 6, Plumstead

CHALK, upper, soft, flinty (*green*, mostly light).
Magas pumilus, t 119. Mundesley
Ostrea canaliculata, t 135, f 1, ditto
Terebratula octo-plicata, t 118, f 2, Lewes
plicatilis, t 118, f 1, Margate, and Northfleet

CHALK, lower, hard, flintless, but containing fine silicious grains, and Totternhoe, Ryegate or Fire Stone, (*green*, mostly deep).
Ammonites rusticus, t 177, Comb Pyne

CHALK MARL, loamy or earthy Chalk, with chalky hard beds, or Clunch, red Cawk, &c. (*white*, No. 2.)
Ammonites rostratus, t 173, Roak
splendens α, t 103, f 1 and 2, Folkstone N E
varians, t 176, Hamsey, Plumpton, and Wilts
Cerithium melanioides β, t 147, Hamsey
Cirrus plicatus, t 141, f 3, Folkstone, N E
Hamites armatus, t 168, Roak, and Sussex
Nautilus Comptoni, t 121, Earl Stoke
elegans, t 116, Norton-Bavant and Ringmer
Nucula pectinata, t 192, f 6 and 7, Dover S W, Folkstone N E, [and Sussex
Patella lævis, t 139, f 3, Folkstone N E
Pecten Beaveri, t 158, Childrey, and Hamsey

GREEN SAND, chloritic, micaceous sometimes, loamy (sometimes yellow, brown, or red) with Fuller's Earth, and Sulphate of Barytes, (*white*, No. 2.)
Ammonites auritus, t 134, Devizes in the Canal
inflatus, t 178, Under Cliff
monile, t 117, Sandgate
Nutfieldiensis α, t 108, Hythe, and Nutfield
Auricula incrassata, t 163, f 1 to 3, Blackdown
Cardita? tuberculata, t 143, Devizes in the Canal
Cardium proboscideum, t 156, f 1, Blackdown
umbonatum, t 156, f 2 to 4, ditto
Chama digitata α, t 174, Long-Comb Girts
Helix gentii, t 145, Devizes in the Canal
Nautilus simplex, t 122, Boreham
Ostrea gregarea α, t 111, f 1, near Devizes
Pecten orbicularis, t 186, Devizes in the Canal
Planorbis euomphalus γ, t 140, f 8, Haldon Hills
radiatus, t 140, f 5, ditto
Pleurotoma rostrata β, t 146, f 3, Devizes in the Canal
Terebratula Lyra, t 138, f 2, Chute Farm
pectita t 138, f 1, Horningsham

BRICK EARTH, or Blue Marl Clay, on Woburn Sand (*blue green*, No 3).
Ostrea acuminata β, t 135, f 2, Withyham ?

PORTLAND ROCK, Aylesbury, Swindon, Purbeck, Kentish Rag, &c. Limestone; sometimes it has beds as white as Chalk, see pp. 58 and 59, *(bright blue.)*
Ammonites excavatus, t 105, Dry-Sandford, Marcham, and [Shotover Hill
giganteus α, t 126, Chicksgrove Quarry, Fonthill S E, [and Purbeck
——— β, t 126, Chicksgrove Quarry
plicatilis, t 166, Dry-Sandford, and Marcham
vertebralis, t 165, ditto, ditto
Astarte cuneata, t 137, f 2, Chicksgrove Quarry, and Chilmark
Gryphæa dilatata β, t 149, f 2, Adlington Hills?, Bromham (Wilts), Portland Isle, Radipole, and Rude Cliff
Plagiostoma rigida, t 114, f 1, Shotover-Hill Quarry
Unio Listeri α, t 154, f 3 and 4, New Malton, and Seamer

OAK-TREE CLAY, of Thame, &c. hard, blue, with nodules of stoney Marl, and with Selenites, and Pyritic Fossils, bitumenized Wood, &c. *Sussex Marble* in its lower part? *(blue.)*
Astarte lineata, t 179, f 1, Headington Common
Ostrea deltoidea α, t 148, Cambridge N, and Headington Com- [mon or Shotover Hill

CORAL RAG, and Pisolite under it; perhaps sometimes wanting, in or on the Woburn Sand? *(orange.)*
Ammonites splendens β, t 103, f 3, Westbrook
Ostrea gregarea β, t 111, f 3, ditto

CLUNCH CLAY, with beds near its top of Chalk-like Clunch, or Dogger Stone, on Alum Shale *(dun purple.)*
Ammonites Duncani, t 157, St. Neots
Gryphæa dilatata γ, t 149, Bourn, Calne W, Ilminster S, Sand- [foot Castle, and Woburn N
Ostrea deltoidea γ, t 148, Sandfoot Castle
palmetta, t 111, f 2, Marston Field
Patella latissima α, t 139, f 1 Bolingbroke

ALUM SHALE of Whitby, &c, imbedding Cement Balls, Jet, &c.
Ammonites angulatus, t 107, f 1, Lyth, near Whitby
communis α, t 107, 2 and 3, near Whitby
Walcotii β, t 106, ditto
Patella lævis, t 139, f 4, ditto

KELLOWAY STONE, at Staiths, &c. with blue hard Cores, under Selenitic Clay *(deep purple.)*
Ammonites Calloviensis α, t 104, Kelloway's Bridge
Cardita? deltoidea β, t 197, f 4, ditto
Chama digitata β, t 174, Huntcliffe
Gryphæa incurva γ, t 112, f 2? Chatley
Pecten fibrosus γ, t 136, Kelloway's Bridge
Plagiostoma obscura, t 114, f 2, ditto

CORNBRASH, or Bedford Limestone *(brown.)*
Ammonites Herveyi α, t 195, u, near Aswarby (not Spalden)
Cardita? deltoidea α, t 197, f 4, Lechlade N, and Peterborough
lirata β, t 197, f 3
producta β, t, 197, f 1, Peterborough
Pecten fibrosus α, t 136, f 2, Chatley

FOREST MARBLE (of Whichwood) Stunsfield and Collyweston grey Slate, or Tilestones, with Bones, and Vegetable Impressions! *(light blue,* No 6.)
Patella rugosa, t 139, f 6, Amberley Heath, and Hampton [Common

CLAY UPON UPPER OOLITE, *(white,* or light yellow.)
Ostrea acuminata *α,* t 135, f 2, near Bath E

UPPER OOLITE, great or superior Oolite, Bath Free Stone *(yellow,* No. 7.)
Pecten fibrosus *β,* t 136, f 2, Northleach
Plagiostoma cardiiformis, t 113, f 3, Petty-France

FULLER'S EARTH ROCK, lead-coloured, dark and purple Clay, occasioning great land *Slips (white,* No. 8, 9, and 10.)
Ostrea acuminata *γ,* t 135, f 3, Aynhoe
Plagiostoma ovalis, t 114, f 3, Small-Cossall

UNDER OOLITE, inferior or lower Oolite *(reddish orange,* No. 12.)
Ammonites Banksii, t 200, Sherborne*
Blagdeni, t 201, ditto*
Braikenridgii, t 184, Dundry Hill
Brocchii, t 202, Dundry, and Sherborne*
Brongniarti, t A, f 2, p 190, Bayeux, and Yeovil
Gervillii, t A, f 3, p 189, Bayeux
Herveyi *β,* t 195, lo. Bradford, and Knowles Hill
Stokesi, t 191, near Bridport? (in Marl)
Walcotii *γ,* t 106, Mitford, and White Lackington
Astarte elegans, t 137, f 3, Babling Hill?
lurida, t 137, f 1, Fox Hill?, and Taunton
Cardita? obtusa *α,* t 197, f 2, Bath, and Dundry
producta *α,* t 197, f 1, Bath, near Bayeux, and Chapel-[house
Cirrus nodosus, t 141, f 2, Yeovil
Gryphæa dilatata *ζ,* t 149, f 1, Farley Gate
Lima gibbosa *α,* t 152, near Bath, Cotswold Hills, and Taunton
Nautilus obesus, t 124, Norton under Hamdon
sinuatus, t 194, near Yeovil
Pecten equivalvis, t 136, f 1, Carrington, Dursley, Farley Gate, [Ilminster, and White Lackington
fibrosus *η,* t 136, f 2, Carrington
Planorbis euomphalus *β,* t 140, f 8 and 9, near Bath
Terebratula acuta, t 150, f 1 and 2, France, Ilminster, and Stan-[ton Hill
resupinata, t 150, f 3 and 4, Ilminster
Trochus abbreviatus, t 193, f 5, Dundry
concavus, t 181, f 3, Little Sodbury
dimidiatus, t 181, f 1 and 4, ditto
duplicatus, t 181, f 5, ditto
elongatus, t 193, f 2 to 4, Dundry
punctatus, t 193, f 1, ditto

MARLSTONE, in blue Marl, or upper Clay of the Lias, producing a district of Ant-hilly pastures, *(faint blue,* No. 14.)
Ammonites Walcotii *α,* t 106, near Bath

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* The REV. MR. RACKET kindly and disinterestedly sent these three species of Ammonites to Mr. Sowerby, from Sherborne.

Blue Lias, water-setting, beddy Limestone, with Bones of large Fish (often mentioned as Crocodiles,) &c. &c. *(deep blue*, No. 15.)
Ammonites Brookii, t 190, Lyme Regis N E
Bucklandi, t 130, near Bath W
Conybeari, t 131, Bath W
fimbriatus, t 164, Lyme Regis N E
Greenoughi, t 132, Bath W
Henleyi, t 172, Lyme Regis N E
Loscombi, t 183, Lyme Regis N E
obtusus, t 167, Lyme Regis N E
Cardita? lirata α, t. 197, f 3, Bath W
Gryphæa incurva α t 112, f 1, Bath W, Framilode, and Frethern
obliquata, t 112, f 3, Donat's Castle
Nautilus intermedius α, t 125, Keynsham
striatus, t 182, Lyme Regis NE
truncatus, t 123, Bath W, and Keynsham
Plagiostoma pectinoides, t 114, f 4, Pickeridge Hill (in Clay)
punctata, t 113, f 1 and 2, Barry Island, Cardiff [Castle, Donat's Castle, and Pickeridge Hill
Trochus Anglicus, t 142, Bugthorp, Weston, White Lackington, [and Yeovil
Unio crassissimus, t 153, Bath W (in Clay)

Yellow Limestone, buff or magnesian Limestone, with blue mild beds near the bottom? (Derby Rep. I. 157, II. 409) *(bright blue.)*
Unio hybridus, t 144, f 2, Nottinghamshire
Listeri β, t 154, f 1, 3 and 4, Durham.

Coal Measures, Carboniferous Strata *(India Ink.)*
Ammonites Walcotii δ, t 106, Colebrook Dale, (in Shale or Blae) and Trent River?

Derbyshire Peak Limestone, *mountain* or metaliferous Limestone, sometimes interlaid with Basaltic strata, and sometimes with poor or barren Coal Measures *(purple blue.)*
Ammonites Walcotii ε, t 106, Llantrissent, and Devonshire.
Cirrus acutus, t 141, f 1, Derbyshire
Gryphæa dilatata η, t 149, Bramberry Hill
Helix? cirriformis, t 171, f 2, Derbyshire
striatus, t 171, f 1, Derbyshire
Orthocera annulata, t 133, Colebrook Dale
Planorbis equalis, t 140, f 1, Kendal
Spirifer cuspidatus, t 120, Castleton, Cork, near St. Hilary, and [St. Vincent's Rock
Terebratula Wilsoni, t 118, f 3, Mordiford.